COMMUNICATION ABOUT CONFLICT SPECIES IN FLORIDA:

FINDINGS FROM STUDY TASK I

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Prepared by:

William F. Siemer, Meghan S. Baumer,
and Daniel J. Decker
Human Dimensions Research Unit
Department of Natural Resources
Cornell University

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EXECUTIVE SUMMARY

The Wildlife Assistance Program, within the Division of Habitat and Species Conservation in the Florida Fish and Wildlife Conservation Commission (FWC), strives to promote coexistence with fish and wildlife through communications that help Floridians understand and avoid, minimize, or mitigate negative interactions that create human-wildlife conflict.

In 2013, FWC sponsored research by the Human Dimensions Research Unit at Cornell University to increase their understanding of current messages being communicated about three native or naturalized species groups (i.e., black bear, coyote, bats) and three nonnative or invasive species groups (i.e., lionfish, Argentine black and white tegu, monkeys) that are a frequent source of human-wildlife conflict in Florida. FWC sponsored this project to fill information gaps and provide guidance for communication efforts related to these species. The study has two objectives:

1. Document key messages about wildlife conflict species that are being communicated to Floridians, through newspaper articles and FWC print and electronic media.

2. Inform development of FWC communications about wildlife conflict species that helps Floridians avoid and/or manage negative interactions.

Study objectives will be satisfied by completing two research tasks. Task I is to analyze content of Florida newspaper articles and FWC documents related to the six species groups identified by FWC. In particular, FWC staff expressed interest in learning how media are framing stories about the conflict species, and how (or the extent to which) messages in FWC documents are communicated through newspaper articles. In this document, we report findings from Study Task I and utilize research findings to offer recommendations on the design of Study Phase II.

Methods

Newspaper article content analysis:

We analyzed content from samples of newspaper articles published on each of the featured species between January 1, 2011 and December 31, 2013. Two criteria were used to set the article sampling frame: (1) obtaining a statewide cross-section of articles for analysis; and (2) focusing on content available in daily newspapers distributed in Florida.

We used two electronic search engines to search 34 newspapers, using species names or species group name (i.e., bat, monkey) as search terms. All relevant articles were downloaded and stored. We took several steps to reach a target of analyzing approximately 50 articles per species or all articles if less than 50 were discovered.

We analyzed content to address specific study questions in multiple topic areas. A protocol was developed to identify and code text of the following types: article descriptors, descriptors of the species, positive or negative interactions/effects on people or the environment

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or on the featured species, sources mentioned in the article, quotes by FWC personnel or others, problem prevention messages, statements about why Floridians experience problems related to the featured species, and statements about solutions to or actions taken to reduce those problems. Three research assistants were trained to use the coding protocol designed by the research team. New coding categories were added as needed during the first round of coding. Aggregate categories emerged and were applied in a second round of content coding by the research team.

FWC document content analysis:

The FWC Study Contact Team identified sets of FWC documents related to each species that should be included in our analysis. The approach to content coding mirrored the approach used to code newspaper content. A coding protocol was developed and a single individual coded all FWC document content for any given species.

The FWC Contact Team identified all press releases produced by FWC for each species during the period January 1, 2011 to December 31, 2013. Research staff read each press release, grouped the releases into like categories, and where possible, analyzed the releases for mention of problem prevention messages and problem-framing or solution-framing statements.

FWC interviews:

FWC staff members were interviewed to develop a richer understanding of FWC communication concerns and information needs that could be addressed effectively through message testing experiments (i.e., Study Task II). We completed telephone interviews (mean duration 35 minutes per interview) with 12 FWC staff members identified by the FWC Study Contact Team. Interviews followed an interview guide developed in collaboration with the Study Contact Team. Interview comments were summarized under headings representing questions in the interview guide, then reorganized under concern headings that emerged across interviews. Interview findings were discussed during a full-day meeting with the contact team held on June 3, 2014 in Tallahassee, which led to decisions about species to include in message testing experiments (Study Task II).

Summary and Conclusions

This study documents key messages about wildlife conflict species that were being communicated to Floridians through daily newspaper articles between 2011 and 2013. The following key findings and conclusions emerged from the study.

Media messages sent and agenda setting:

Mass communication studies have demonstrated a relationship between the amount of media coverage devoted to an issue and the relative importance that audiences place on that issue. These agenda-setting effects can result when salience of an issue is raised through media exposure.

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The amount of media coverage we found on three particular topics –reducing coyote-related risks to pets, providing nonlethal responses to negative human-bear interactions, and controlling or eradicating lionfish – suggests that exposure to news media between 2011 and 2013 could have prompted Floridians to place those topics on the public agenda. Public expectations for FWC response to these issues, whether reasonable or not, may have been elevated by the way media have covered human interactions with these species.

Program maturity and problem framing:

This analysis of FWC program documents and newspaper coverage supports a conclusion that newspaper coverage related to the focal species is in part a reflection of wildlife management program maturity. Of the six species included for analysis, black bear management is arguably the most mature program. FWC has invested significant resources in the black bear management program for many years and that investment has resulted in a comprehensive set of internal documents, press releases that support program objectives, consistent problem framing, and consistent messages about problem-prevention actions. Problem prevention messages related to black bear were communicated in FWC materials (including about 75% of press releases), consistently transmitted by FWC spokespersons, and were picked up with relative accuracy in newspaper articles (this could be considered a strength of newspaper articles from an FWC perspective).

Problem-prevention information is provided in FWC documents about coyotes and those problem-prevention messages were transmitted in newspaper articles, but coyote expansion is a relatively recent phenomenon and FWC is still developing a comprehensive strategy for response to negative human-coyote interactions (FWC 2012a). The fact that this issue is still in an emerging phase may help explain why a unified problem frame is not apparent in FWC documents and was not being transmitted in newspaper articles between 2011 and 2013.

Monkey-related issues also were in an emerging phase, without clear definition of FWC roles being expressed in newspaper reports or FWC documents during the study period. Communication about monkeys did not seem to be driven by the few FWC statements and documents offered on monkeys between 2011 and 2013. That pattern may change in the future with maturation of FWC policies and procedures in this arena.

General absence of problem framing statements:

Our analysis suggests that problem framing (i.e. attempts to explain why Floridians were experiencing problem interactions with a given species) was often absent in sampled newspaper articles between 2011 and 2013. This is consistent with (or not surprising given) our finding that most high content newspaper articles we analyzed were episodic, not thematic.

Lack of thematic coverage about black bear (or coyote) issues may reinforce the idea that negative human bear interactions are a problem created by individuals and should be solved only by changing individual's behavior. Better problem and solution framing, as offered in FWC documents may communicate the negative human-bear problems are created by collective

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behavior and require collective or community-based solutions, as well as individual responsibility and behavior change.

Implications for message testing research:

Following review and discussion of Task I findings, the contact team decided to focus Study Task II on testing messages to inform attitudes, perceptions, or behavioral intentions related to black bear, coyote and lionfish. This decision was based on Study Task I findings that tegu were receiving little media attention, negative human-bat interactions were not being discussed in the media as much as previously expected, and newspaper coverage about monkeys largely focused on efforts to capture a few specific individuals. Concentrating project funding on just bear, coyote and lionfish messaging will allow more in-depth testing on those topics.

Five FWC communication concerns were identified in FWC interviews:

1. Increasing problem recognition and improving problem definition among Floridians.
2. Developing reasonable/accurate risk perceptions among Floridians and visitors.
3. Developing realistic/accurate expectations among Floridians for FWC response to problems and role of FWC in wildlife problem management.
4. Motivating problem prevention or mitigation behavior among Floridians.
5. Adoption of a sustainable human-wildlife coexistence ethic among Floridians.

The Study Contact Team determined that concern #4 (motivating problem prevention behavior) should be a priority to address in the next phase of this research, with regard to black bear and coyote messaging. Other communication concerns will be addressed through message testing related to lionfish.

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Our FWC interview guide and request to conduct interviews with FWC staff members was reviewed and granted approval by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID# 1006001472).

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TABLE OF CONTENTS

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LIST OF TABLES

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LIST OF FIGURES

1. INTRODUCTION

Floridians seek assistance from the Florida Fish and Wildlife Conservation Commission (FWC) due to interactions with wildlife that they perceive as threatening or problematic. One of the goals of the Wildlife Assistance Program, within the Division of Habitat and Species Conservation of FWC, is to minimize human-wildlife conflict through educational messages and communications that help Floridians understand and effectively avoid or mitigate negative interactions with those species. Late in 2013, FWC contracted with the Human Dimensions Unit at Cornell University to conduct research to address information needs identified by the Wildlife Assistance Program.

FWC sponsored this research to increase their understanding of current messages being communicated about six species/species groups that are a frequent source of human-wildlife conflict in Florida: coyote, black bear, all bats species found in Florida, lionfish, monkeys [mainly Rhesus macaque], and the Argentine black and white tegu. The project has two objectives:

1. Document key messages about wildlife conflict species that are being communicated to Floridians, through newspaper articles and FWC print and electronic media.

2. Inform development of FWC communications about wildlife conflict species that helps Floridians avoid and/or manage negative interactions.

The project objectives will be satisfied by completing two research tasks. Task I is to analyze content of Florida newspaper articles and FWC documents related to the six species groups identified by FWC. In particular, FWC staff expressed interest in learning how media are framing stories about the conflict species, and how (or the extent to which) messages in FWC documents are communicated through newspaper articles.

Based on findings from Task I, in Task II HDRU and FWC staff will develop messages about wildlife conflict species and test them with panels of Florida residents. The messages will be evaluated with regard to how well they achieve specific communication goals, such as influencing attitudes or beliefs about species or FWC, changing species-related risk perceptions, or changing behavioral intentions. FWC staff are interested in crafting messages that influence certain behaviors among Floridians to avoid or mitigate negative interactions with wildlife but do not unnecessarily stigmatize wildlife as pests or vermin. They also want messages that are consistent and communication that maintains the agency's image as a competent steward of wildlife resources and a trusted source of information on wildlife-related issues.

The purpose of this document is to report findings from Study Task I and utilize research findings to offer recommendations on the design of Study Task II. Before describing research methods used and study findings, we highlight some of the communication concerns FWC has related to each of the six focal species in the project, and we provide background information on a few key concepts that provided the conceptual foundations for research within Task I.

1.1. Communication Concerns Related to the Project Focal Species

In 2004, an extensive review of problematic species was initiated through an FWC Nuisance Wildlife Issue Team. In 2011, an FWC Coyote Management Team (CMT) was formed to develop specific recommendations for coyote management in Florida; in particular, FWC responses to human-coyote conflicts. The CMT identified multiple gaps in social science information that were keeping FWC from implementing education and outreach activities necessary to achieve their desired future management condition (i.e., a future in which adverse impacts associated with coyotes are minimized, while positive impacts and benefits from coyotes are understood by Floridians) (FWC 2012a). The same information gaps exist for other problematic species in Florida. This project was sponsored to address information gaps necessary to improve education and outreach for six problematic species selected by the FWC Contact Team: Florida black bear, coyote, bats, lionfish, Argentine black and white tegu, and monkeys. The following communication concerns led to a decision to focus research on these species.

Coyote: Coyotes have expanded their range into Florida over the last 50 years and can now be found statewide. As a result, human-coyote interactions, which can be either positive or negative, have increased markedly and involve people with differing degrees of outdoor experience and self-reliance with regard to dealing with wild animals. Therefore, individuals have different expectations of the role of governmental agencies with regard to assisting them to avoid and/or deal with negative interactions. Negative human-coyote interactions (e.g., coyote attacks on domestic animals, livestock depredation) have produced high-profile media coverage. FWC is concerned about developing messages that address both the reality and perception of the risk posed by coyotes in Florida. In addition, FWC considers coyotes to be a naturalized species in the state and wants to communicate in a manner that avoids stigmatization of coyotes as "pests" or vermin.

The CMT summarized FWC management concerns in the following statement, and further into the report added that education and outreach activities should be a central feature of FWC's coyote management program.

> *The public now has to adapt to the presence of coyotes across most areas of Florida. People are increasingly seeing coyotes or experiencing problems associated with coyotes. These problems are usually categorized as nuisance issues. Nuisance issues can range from coyotes eating crops (for example, watermelons) to attacking pets and threatening people. Overall, increasing numbers of Floridians are looking to FWC for information and guidance on best management approaches to resolve the broad range of nuisance coyote problems. In many cases, people are expecting FWC to solve coyote problems. There is a need for FWC to develop an approach to management of the coyote in Florida that accounts for the presence of this highly adaptable predator as a wildlife species in natural habitats, while also providing a framework for addressing nuisance coyote issues wherever those issues may occur.* (FWC 2012a:8)

Florida black bear: The goal of FWC's black bear management plan is to "Maintain sustainable black bear populations in suitable habitats throughout Florida for the benefit of the species and people" (FWC 2012b: v). To accomplish this goal, objectives focusing on

population, habitat, conflict management, and education were created. Education and outreach programs are an important component of managing human-bear conflicts, which have been increasing as the number and distribution of bears has expanded over the last three decades.

As the quote below demonstrates, information to improve the effectiveness of problem prevention information would contribute to successful implementation of objectives in FWC's bear management plan.

> *The last objective of the plan is to help Florida citizens have a better understanding of bears, support bear conservation measures, and contribute to reducing human-bear conflicts. This will be done by education and outreach programs; partnerships with government, non-governmental organizations, and other stakeholders; and developing "Bear Smart Communities" in areas of high bear activity. The objective's aim is to have at least 75% of the people who contact FWC comply with our conflict resolution advice.* (FWC 2012b:vi)

Additionally, FWC staff members are concerned about receiving a steady increase in bear-related reports and complaints over the last two decades (FWC 2012b). Effective communication with Floridians experiencing problem interactions with bears will be key in avoiding the negative outcomes described below.

> *If this level of conflict continues in high complaint areas, there is concern it could create broad public antagonism towards bears, increase fear of bears, and promote a perception of bears as vermin. Education, waste management, technical assistance, trapping, relocation, and euthanasia will all have to be used to help mitigate complaints.* (FWC 2012b: 65)

Bats: FWC is concerned about population decline for many of Florida's native bat species. As availability of natural roosting sites has declined in the state, some bat species have adapted by roosting in man-made structures. Efforts to remove bats from buildings, especially nursery colonies, can result in the death of large numbers of bats, further compromising the populations of those species. FWC faces the challenge of addressing two fundamental objectives when residents need help with bats in their home or business: protecting human health/safety (by reducing human exposure to bats that may carry rabies or other diseases), and conserving bat populations. FWC staff believe that delivering the message that Floridians can deal with bats in man-made structures without compromising bat conservation will become even more important if the pathogen that causes white-nose syndrome in bats becomes established in Florida.

Tegu: Argentine black and white tegu are an invasive species that have established breeding populations in south Florida. Released or escaped pets are believed to be the source of tegu populations (Johnson and McGarrity 2014). Tegu are known egg predators, and the effects of tegu predation on nests of gopher tortoise and other native species are a concern to FWC. FWC documents ask Florida residents to report tegu sightings to FWC or contact a local trapper to remove the animal (FWC 2012c). Little is known about the effectiveness of efforts to persuade Floridians to engage in efforts like this, which may benefit native wildlife but don't directly benefit the person involved (i.e., they ask for altruistic actions with little direct reward to the person taking the action).

Lionfish: Lionfish are an invasive marine species that has become established across Florida. FWC encourages scuba diving enthusiasts to assist with local lionfish control efforts by harvesting the species with spear gun, hand nets, or other means. As the quote below demonstrates, the rapid growth in lionfish populations around the state has created grave concerns about potential ecological and economic impacts.

> *Lionfish (Pterois volitans) were introduced to the coastal waters of southern Florida more than 25 years ago. Since that time, lionfish have spread throughout the Caribbean and are now invading the Gulf of Mexico. Marine biologists are concerned that lionfish will significantly alter the population dynamics of our native marine species resulting in further impacts to the health of Florida's reefs. The lionfish invasion also has the potential to significantly impact recreational and commercial fishing and the overall economy of Florida.* (Lionfish: Be the Top Predator, myFWC)

FWC held a lionfish summit in 2013 to develop partnerships to facilitate research, outreach, and actions related to lionfish management. At the summit, FWC facilitators proposed a desired future condition statement that included two elements that could potentially be addressed in the present research project. Lionfish were added to this study because related information needs were anticipated.

- *The general public knows about the negative ecological and social impacts of lionfish and is knowledgeable about what to do when they encounter them; and*

- *Stakeholders are engaged and empowered to implement appropriate management actions; (FWC 2013:4)*

Monkey: Free-ranging populations of several monkey species (e.g., rhesus Macaque, vervet monkey, squirrel monkey) have become established in several locations in Florida. Monkeys are a public health concern because they are a vector for disease transmission to humans. Management of a colony of rhesus macaques in the Silver Springs area has received widespread media attention. Public opinion on the practice of trapping and removing problem individuals or groups of monkeys (to limit their population size) is divided, so management interventions are often contentious. Monkeys were included as a focal species in this project because FWC staff members believed it would be useful to understand how newspapers have characterized monkeys and management interventions in Florida. FWC communication about these issues is expected to increase as FWC works with other agencies to address the public health risks associated with monkey colonies.

2. CONCEPTUAL FOUNDATIONS FOR RESEARCH

2.1. Impacts Management

Understanding communication about wildlife management issues is one specific task within the larger project of gathering biological and sociological knowledge and integrating that knowledge into decisions and actions taken by FWC to manage species such as coyote or black bear. Since 2007, FWC staff members have been developing capacity to achieve that integration, by learning and applying ideas within a practice called adaptive impact management, or AIM (Riley et al.

2003, Decker et al. 2012). In the present study, we focused on "impacts," which is a key concept in the AIM approach. Identifying what stakeholders define as impacts for any given wildlife management issue is a crucial first step and a central part of situational analysis in AIM. In this study, we were interested in characterizing newspaper content on fish and wildlife-related interactions, effects, and stakeholder-defined impacts. Impacts are defined as follows:

> *Although values are the reason for management, impacts are the focus of management decisions and actions. Impacts are a subset of the various effects arising from events or interactions involving: (a) wildlife, (b) stakeholders, or (c) wildlife management interventions. Impacts are significant beneficial and detrimental effects, defined and weighted by human values. Impacts are the actionable manifestations of values. Managing levels of impacts identified by stakeholders and wildlife professionals becomes the primary focus of management within IM/AIM.* (Decker et al. 2012:6).

Impacts can be positive or negative, and they can be organized into a few broad categories for purposes of management. Wieczorek Hudenko et al. (2010) proposed a set of impact categories that we used as a framework for our content analysis. The impact categories they proposed are: ecological, economic, health and safety, psychological, and social. Examples related to the species featured in this study are shown in Table 1.

To be an impact, an effect must be both recognized and evaluated as important by a stakeholder. Research scientists can provide a valuable service to wildlife management by discovering or documenting human-wildlife or wildlife-wildlife-environment interactions and effects. Stakeholders, however, define which of those effects is an impact worthy of management attention (Riley et al. 2002). Wildlife agencies like FWC can play a number of crucial roles in AIM, including:

- facilitating discovery of effects (by sponsoring biological or social science research);
- raising awareness of effects among wildlife management stakeholders (in messages delivered through multiple communication channels);
- providing public involvement and stakeholder engagement opportunities that document which effects key stakeholders define as impacts that warrant management attention;
- taking actions to manage impact levels (e.g., helping stakeholders obtain positive and minimize or avoid negative interactions), to maintain acceptance capacity for fish and wildlife and achieve their agencies' wildlife conservation mission.

Table 1. Categories of human-wildlife effects, with example effects that FWC's Wildlife Assistance Program may respond to for the focal species in this research.

Effects categories	Examples within category
Ecological Effects on other wildlife, wildlife habitats, or ecological systems that result from interactions between featured species, other wildlife, humans, and the land	• Negative effects of tegu on reproductive success of egg-laying imperiled species (e.g., gopher tortoise) • Negative effects of lionfish on native marine species and ecosystems
Economic Monetary effects produced as a consequence of featured species presence, or interactions with humans, other wildlife, or domestic animals	• Monetary value of ecosystem services provided by bats (e.g., reduced crop loss to insect damage; reduced need for pesticide application) • Loss of dollars associated with sport fishing in areas where lionfish predation reduces sport fish abundance
Health and safety Effects featured species exert on human health or safety	• Coyote attacks on people, pets • Bear attacks on people • Rabies transmission from bats to humans • Herpes transmission from monkeys to humans
Psychological Positive or negative effects on the psychological well-being of individuals or stakeholder groups	• Fear that pets will be killed by coyotes • Fear that a bat in the attic may be rabid • Frustration with nuisance bear issue • Sense of personal accomplishment associated with contributing to a successful lionfish removal event
Social Social effects associated with interactions among humans, where featured species are the reason for the interactions	• Strengthened social networks in communities working together to conduct lionfish control events, or create bear-safe communities

2.2. Communication Effects

Two media effects—media framing and agenda setting—were of interest to us as we conducted our content analysis of Florida newspaper articles and FWC documents. In this section we discuss the definitions of media framing and agenda setting that guided our work, and we provide examples of studies that have applied those concepts to understand human dimensions of wildlife management issues.

Human communication always occurs from the perspective of some mental framework—it is always framed. Entman (1993) provides a conceptual definition of framing that has been used as a basis for numerous framing studies.

> *To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described* (Entman 1993: 52).

Framing obscures some kinds of information and makes other information more noticeable or memorable to those receiving the message. Information made more salient, through mechanisms such as repetition, placement, and resonance with existing belief systems, is more likely to influence one's attitudes and behaviors because salience increases the likelihood that a message is perceived, processed, and committed to memory (Fiske and Taylor 1991).

Media framing "refers to modes of presentation that journalists and other communicators use to present information in a way that resonates with existing underlying schemas among their audience (Shoemaker and Reese 1996)" (Scheufele and Tewksbury 2007:11). Journalists select frames that they believe will make information more accessible and interesting (Valkenburg et al. 1999). Four general types of media frames are commonly employed: (1) a conflict frame (i.e., emphasis on conflict between two individuals or groups); (2) a human interest frame (i.e., emphasis on the personal or emotional aspects of an event, problem, or issue); (3) a responsibility frame (i.e., emphasis on assigning responsibility for causing or solving a problem to some individual or entity); or (4) an economic consequences frame (i.e., emphasis on the economic consequences that some event, issue, or problem will have for individuals, groups, regions, etc.) (Valkenburg et al. 1999:567).

The media framing model is built around the assumption that how an issue or topic is presented by the media has an influence on how that issue is understood and interpreted by audiences (Valkenburg et al. 1999, Scheufele 1999, Scheufele and Tewksbury 2007, Kim et al. 2002). For example, newspaper articles reporting on a human-bear conflict can depict the interaction as a bear behavior problem (i.e., a consequence of increased bear feeding activity in fall) or as an individual or collective human behavior problem (e.g., a consequence of irresponsible personal behavior or lack of community practices to make garbage unavailable to bears). The way a problem is framed has direct implications for solution framing (e.g., the solutions to changing bear behavior will differ from those for changing human behavior). For example, Iyengar (1991) found evidence that, for some issues, "episodic" newspaper articles (i.e., those focused on a single event or experience) increased attributions of individualistic

responsibility for a given problem, while "thematic" articles (i.e., those focused on general outcomes or conditions) increased attributions of societal responsibility for solving the same problem.

Siemer et al. (2007) used a content analysis of newspaper, radio and television reports in New York State between 1999 and 2002 to assess how media sources framed black bear management problems and solutions. They found that nearly all reports focused on specific events rather than general outcomes or conditions (i.e., the frames were episodic rather than thematic), focused on a narrow set of bear-related problems, suggested few solutions to problems, and emphasized that individuals rather than government agencies were responsible for solving bear-related problems.

In contrast, a content analysis of newspaper articles about Florida panther (Jacobson et al. 2011) found that thematic coverage was common in the 513 newspaper articles they found published in two regional and four statewide Florida newspapers between 2003 and 2006. They argued that the high proportion of thematic articles resulted because episodes of human-wildlife interaction are less frequent with panther than with black bears, so panthers are more likely to be represented in an abstract way. Moreover, they suggested that thematic articles were common because panthers were at the heart of conflicts between wildlife conservation (panther recovery) and landowner development rights.

Other studies have evaluated media content to understand shifts in how carnivore behavior was framed in newspapers. Wolch et al. (1997) analyzed articles published in the *Los Angeles Times* between January 1, 1985 and April 30, 1995 to document how the terms used to describe cougars changed before and after cougar hunting was banned in California, and cougar attacks increased. They documented a shift toward more negative coverage and negative descriptors of cougars that paralleled an increase in human-cougar interactions and cougar attacks after the hunting ban. In another study, Alexander and Quinn (2012) used content analysis of newspaper articles in Canada between 1995 and 2008 to illuminate the social context for management of coyotes in and around Canadian parks. They identified 215 primary news articles about coyotes. They found that 79% (169) of primary news articles between 1995 and 2008 reported on urban coyote interactions. Forty-four percent (94) of those articles depicted an actual human-coyote or pet-coyote interaction; 11% of articles reported a coyote-related human injury. Twenty-seven percent of articles (57) mentioned concerns about child safety, pet safety, or property damage. Negative descriptor words or phrases about coyotes (e.g., brazen, bold, wily, mangy) were found in 43% of articles (93). They concluded that the types of words and phrases often used to describe coyote attacks in newspaper articles (e.g., brazen, unprovoked, brutal, traumatic) illustrate the socially-charged nature and challenges of managing coyotes in urbanized landscapes.

Agenda setting refers to the relationship between the amount of media coverage devoted to an issue and the relative importance that audiences place on that issue (McCombs and Shaw 1972). Agenda-setting effects are those observed when salience of an issue is related to (or more appropriately, caused by) media exposure. Increases in awareness of human-wildlife interactions (like bear attacks) when media coverage about those interactions increases would be an example.

Framing effects are changes in the perceptions of the attributes of an issue that correspond with media coverage. Changes in perceptions of the quality of a person, issue, or being would be an example, as would short-term attitude change. Following this logic, it is reasonable to hypothesize that repeated exposure to stories about coyote attacks on pets (as occurred in Canadian parks between 1995 and 2008 [Alexander and Quinn 2012]) may communicate that coyote threats to pets are an important issue (agenda setting), and those exposed to such stories may be prompted to think about pet safety when asked to make evaluative judgments about coyotes and coyote-related risks (framing).

Some scholarship has been conducted on agenda setting and framing effects in the context of the public discourse about gray wolf reintroductions. Enck and Brown (2002) documented a relationship between media exposure and negative attitudes toward wolf reintroduction in the Adirondack region of northern New York among the region's residents. Duda et al. (1998) documented that public attitudes towards wolf reintroduction in the Adirondack region became less favorable after extensive media coverage about the possible effects of reintroduction. These would be consistent with framing effects. Houston et al. (2010) completed a computer-aided content analysis of 6,144 newspaper articles on wolves published in the U.S. and Canada between 1999 and 2008. They found that discourse about wolves became increasingly negative over the decade and that articles published in states or provinces with new wolf populations had significantly more negative evaluative expressions about wolves than articles published in other states or provinces. They also found evidence of an increase in negative attitude statements in states within a federal wolf recovery zone, even if wolves were not yet present in the state. They noted that most discussion about wolves focused on whether wolves should be killed to minimize threats to livestock, pet, and human safety. These effects would be consistent with changes in media frames.

3. METHODS

3.1. Newspaper Content Analysis

Qualitative content analysis includes an array of techniques for classifying large amounts of text data into categories, by coding the text based on shared meaning (Weber 1990). Insights are obtained from content analysis as coding and grouping text passages reveals themes in a body of writings. Hsieh and Shannon (2005) describe three distinct approaches to content analysis (i.e., conventional, directed, and summative). Our approach is best described as a directed content analysis, in which existing theories and concepts serve as initial coding categories and additional categories are added as necessary. In this study, existing categories of species status, wildlife-related impacts, and framing of wildlife problems and solutions served as starting points for content coding.

We analyzed content from samples of newspaper articles published on each of the featured species between January 1, 2011 and December 31, 2013 (i.e., the 36-month period prior to start of the research contract). Two criteria were used to set the article sampling frame: (1) obtaining a statewide cross-section of articles for analysis; and (2) focusing on content available in daily newspapers distributed in Florida.

We identified articles using two electronic search engines (i.e., *Access World News* and *LexisNexis*) available through the Cornell University library system. We included 34 newspapers in our search (Table 2). That total includes a few newspapers in north-central Florida circulated less than daily (those newspapers were added to account for a gap in newspaper coverage representing that region).

We used species names (i.e., coyote, black bear, lionfish, tegu, macaque) or species group name (i.e., bat, monkey) as search terms. Articles that contained the search term but did not refer to the featured species (e.g., the term "bear" referred to a sports team named The Bears; the term "bat" referred to a baseball bat) were ignored. All relevant articles were downloaded and stored.

We identified hundreds of articles in four of the species searches (i.e., 632 bear, 258 coyote, 332 bat, and 498 lionfish articles); this was far more than could be analyzed within budget constraints, or was necessary for an exploratory analysis. We took several steps to reach a target of analyzing approximately 50 articles per species or all articles if less than 50 were discovered. In step 1, research assistants read all articles and sorted them into four categories: high content, medium content, low content, and duplicate (i.e., same article published in multiple outlets). Articles that included content on multiple topics identified as study questions were labeled high content; those that contained content on one topic identified as a study question were labeled medium content. Meeting announcements, catch-all reports about local community news, travel pieces and other articles that simply mentioned the species briefly were labeled low content. We coded content for all high-content articles for species where fewer than 100 high-content articles for the species were identified (i.e., coyote, bat, tegu). We coded a random sample of 50 high-content articles for species where more than 100 high content articles were found (i.e., bear, lionfish, monkey).

Article content was coded using Atlas.ti software (Friese 2013). Content analysis was conducted to address specific study questions in multiple topic areas (Table 3). A protocol was developed to identify and code text of the following types: article descriptors (i.e., newspaper title, article title, publication date), descriptors of the species, positive or negative interactions/effects on people or the environment or on the featured species, sources mentioned in the article, quotes by FWC personnel or others, problem prevention messages, statements about why Floridians experience problems related to the featured species, and statements about solutions to, or actions taken to, reduce those problems. Three research assistants were trained to use the coding protocol designed by the research team (coding protocol provided in Appendix A). All assistants and two members of the research team coded the same 10 high-content coyote articles. Coding choices were discussed to increase consistency across coders, then each assistant was assigned a species and asked to code all articles for their assigned species.

We placed coded content into MS Excel spreadsheets, to analyze findings from first-round coding and to continue grouping and synthesizing findings in a process of secondary coding. New coding categories were added as needed during the first round of coding. Aggregate categories emerged and were applied in the second round of coding.

Table 2. Florida newspapers searched for content on featured species.

Publication	Location	Circulation rate
Banner, The	Bonita Springs	Daily
Bonita Daily News	Bonita Springs	Daily
Bradenton Herald	Bradenton	Daily
Charlotte Sun	Port Charlotte	Daily
Citrus County Chronicle	Crystal River	Daily
Daily Commercial, The	Leesburg	Daily
Daytona Beach News-Journal	Daytona Beach	Daily
Englewood Sun	Englewood	Daily
Florida Times-Union, The	Jacksonville	Daily
Gainesville Sun	Gainesville	Daily
Hernando Today	Brooksville	Daily
Highlands Today	Sebring	Daily
Jackson County Floridian	Marianna	Daily
Key West Citizen, The	Key West	Daily
Leger, The	Lakeland	Daily
Marco Island Eagle	Marco Island	Daily
Mayo Free Press, The	Mayo	Weekly
Miami Herald, The	Miami	Daily
Naples Daily News	Naples	Daily
News Herald, The	Panama City	Daily
North Port Sun	North Port	Daily
Northwest Florida Daily News	Fort Walton Beach	Daily
Ocala Star-Banner	Ocala	Daily
Orlando Sentinel, The	Orlando	Daily
Palm Beach Daily News	Palm Beach	Daily
Sarasota Herald-Tribune	Sarasota	Daily
St. Augustine Record, The	St. Augustine	Daily
Stuart News-Port St. Lucie News/News Tribune	Stuart	Daily
Sun Sentinel	Fort Lauderdale	Daily
Suwannee Democrat	Live Oak	Daily; not weekends
Tampa Bay Times	St. Petersburg	Daily
Tampa Tribune, The	Tampa	Daily
Vero Beach Press Journal	Vero Beach	Daily
Wakulla News, The	Crawfordville	Weekly

Table 3. Study questions that guided analysis of newspaper and FWC document content analysis.

How the species/species group is described or characterized (descriptors)
• How is the species characterized by mass media (e.g., status, positive and negative attributes, interactions with humans)?
• In what ways is characterization of the species in FWC documents similar to or different from characterizations in newspaper articles?
Effects on people, the environment, and the featured species
• What positive and negative effects or impacts associated with the species are mentioned in newspapers? Are some effects known to the agency or reported in research literature ignored in media reports?
• How does mention of effects or impacts in newspaper articles contrast with that in FWC documents?
Problem-prevention actions
• What messages about problem prevention are being communicated in newspaper articles? How do those messages compare to messages being communicated in FWC materials?
Problem and solution framing
• How are newspaper articles framing why humans are having problems with the featured species and how those problems can be solved?
• How are the problem and solution frames offered in FWC documents consistent with or different from those offered in newspaper articles?
Sources mentioned
• What entities are providing information/opinion about these species, their impacts, and how those impacts are being or should be managed?
• How often does FWC appear as a source? What messages are being communicated through FWC statements?

3.2. FWC Document Analysis

The FWC Contact Team identified FWC documents associated with each of the featured species. The number and types of documents varied by species group. The approach to coding content in FWC documents mirrored that used to code newspaper content. We used Atlas.ti software for the first round of content coding and we created MS Excel spreadsheets to analyze and synthesize findings in a process of secondary coding. A coding protocol was developed (Appendix B) and a single individual coded all FWC document content for any given species. Content of all documents identified by the contact team was coded (no sampling process was needed).

The FWC Contact Team identified all press releases produced by FWC for each species during the period January 1, 2011 to December 31, 2013. Research staff read each press release, grouped the releases into like categories, and where possible, analyzed the releases for mention of problem prevention messages and problem-framing or solution-framing statements.

3.3. FWC Staff Interviews

One member of the research team interviewed FWC staff members, to develop a richer understanding of FWC communication concerns and information needs that could be addressed effectively through message testing experiments (i.e., Study Task II). The Study Contact Team suggested a set of 13 interview candidates; we contacted all of them and completed telephone interviews with 12 FWC staff members. Interviews ranged in duration from 23 to 46 minutes (mean length 35 minutes) and followed an interview guide (Appendix C) developed in collaboration with the contact team. Permission to contact human subjects for this purpose, using the supplied interview guide, was granted by the Cornell University Office of Research Integrity and Assurance (Institutional Review Board for Human Participants Protocol ID# 1006001472). Interview comments were summarized under headings representing questions in the interview guide. Comments were reorganized under concern headings that emerged across interviews. Interview findings were discussed during a full-day meeting with the contact team held on June 3, 2014 in FWC's Bryant Building in Tallahassee. The research team led a discussion of the interview findings that led to decisions about species to include in message testing experiments (Study Task II).

4. CONTENT ANALYSIS FINDINGS AND DISCUSSION

We coded a sample of 256 high-content newspaper articles, from a total of 558 high content articles identified (Table 4).

Table 4. Summary of number of articles identified and coded, by species group.

Article classes	Species/species group					
	Bear	Coyote	Bats	Lionfish	Tegu	Monkeys
High content (coded)	50	63	53	50	11	29
High content (total)	293	63	53	109	11	29
Medium content	115	35	49	110	7	46
Low content	224	160	230	279	15	190

4.1. Black bear

All findings from analyses of black bear newspaper articles (Tables B1 – B15) and FWC documents (Tables B16 – B26) appear in Appendix D. Findings highlights are summarized here.

Box 1: Black bear key findings:

- Between 2011 and 2013 newspaper articles about Florida black bear generally portrayed bears positively, often mentioned public concerns about lethal control of problem bears, and were more likely to mention negative impacts on bears than on humans. The most common type of article was about a bear in a residential area and articles emphasized property damage and threats to human safety more than other negative impacts on humans. Newspaper articles focused on a single event or interaction (not thematic bear management issues) and few contained statements about why Florida is experiencing more negative human-bear interactions (i.e., articles seldom contained clear problem framing statements).
- Newspaper articles often contained problem prevention information and those messages were consistent with recommendations in FWC materials. FWC representatives were the most frequently quoted source in newspaper articles.
- FWC materials contained clear and consistent problem-framing statements, but those statements were not communicated in newspaper articles.
- In FWC materials the most-frequently-mentioned solution to bear problems was preventing access to anthropogenic food sources; in contrast, relocating bears was the most common solution suggested in newspaper articles.

4.1.1. Bear descriptors

A word cloud diagram, where word size depicts word frequency, provides a useful way to visualize how newspaper articles depicted what black bears are and what they do (Figure 1). The most common descriptors about black bears between 2011 and 2013 related to their population size, threatened status, range and movements, or their physical traits (e.g., size, weight in

pounds) and natural history (Table B1). The next most common set of descriptors related to (predominantly nonthreatening) bears actions –the most frequent of which was tree climbing (many of the articles were about an incident involving a bear in a neighborhood tree). Descriptors of bear eating and feeding habits also were common (Table B1). Descriptors in FWC quotes followed a similar pattern as seen in newspaper content generally (Table B3). Few articles used negative anthropomorphic descriptors (positive anthropomorphic descriptors were twice as common, but were also mentioned infrequently) (Table B4). On the whole, text in newspaper articles usually portrayed bears in neutral or positive terms. As Figure 1 indicates, bears were more likely to be depicted as a threatened species than as an aggressive or threatening animal to be feared.

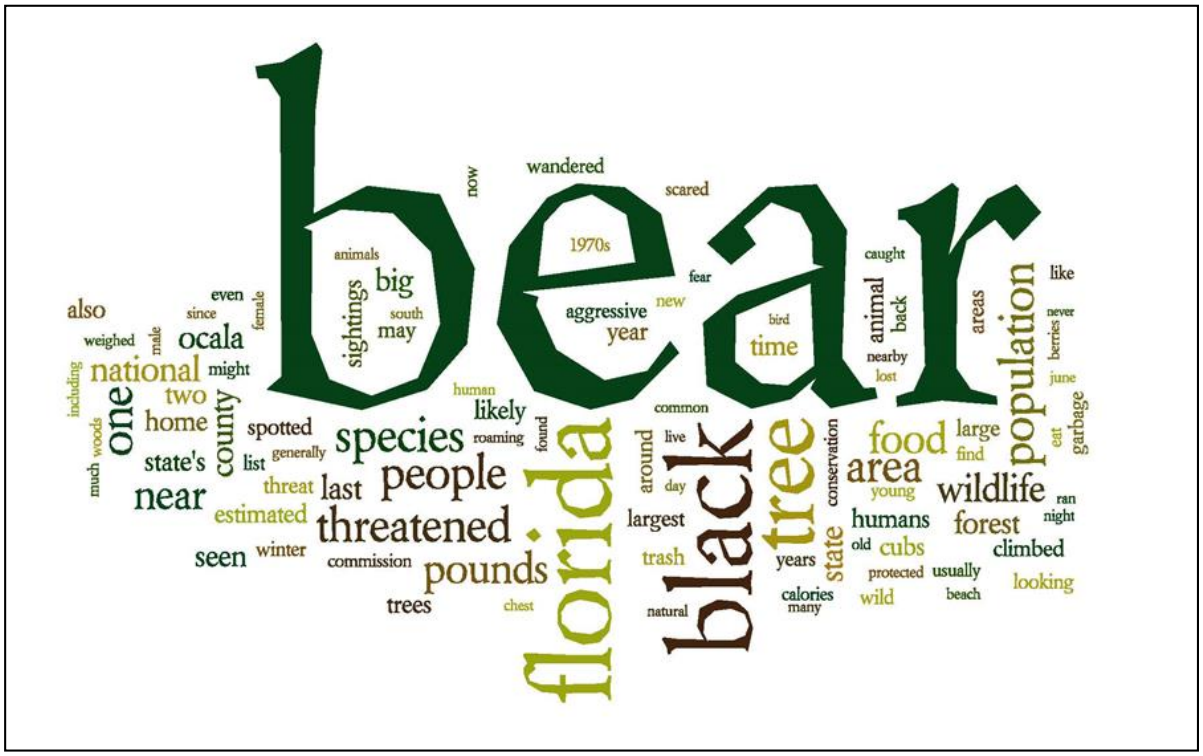

Figure 1. Word cloud generated from word counts in sample of black bear articles, 2011-2013.

4.1.2. Effects and impacts

We coded text that mentioned positive or negative effects (or impacts) on people, the environment, or bears. We found that newspaper articles were more likely to mention negative impacts on bears than on people (positive impacts of any type were infrequently mentioned). The most-commonly mentioned negative effects on bears were habitat loss and death of bears due to euthanization, bear-vehicle collisions, or bear poaching (Table B8). Deaths of individual bears were emphasized more than habitat loss or other factors affecting bears at a population level.

There were relatively few (34) mentions of negative impacts on people (Table B5). The most commonly mentioned negative impacts were property damage, threats to human safety, and

preying on livestock. The emphasis on damage to property (other than crops) and threats to human safety stems from the fact that the most common type of newspaper story focused on an episode involving a bear in a residential neighborhood, often in a tree. FWC statements focused on bears getting into garbage (Table B5). Language in FWC documents doesn't dwell on negative impacts, but human safety is the most common negative impact mentioned (Table B19) in FWC documents (Table B19).

4.1.3. Problem prevention messages

Newspaper articles frequently contained information on actions to prevent problem interactions with bears. The most common suggestions related to what to do if one confronts a bear, how to prevent food attraction, and how to avoid problems with bears when recreating outdoors (Table B9). FWC quotes in newspaper articles sometimes provided this information directly (Table B9). Problem prevention recommendations were the strongest element in FWC documents (Table B22). FWC documents (including about 75% of press releases) communicated consistent problem prevention messages and those messages were transmitted accurately in newspaper articles.

4.1.4. Problem and solution messages

We found that FWC documents, including about 40% of press releases, were providing clear, consistent problem framing, but those problem frames were not communicated well in newspaper articles between 2011 and 2013. Few sampled newspaper articles included text clearly articulating *why* communities in Florida have problems with bears, or why those problems are occurring at an increasing rate. In 6 instances, newspaper articles mentioned that food attraction or food conditioning were problems, but only a few of these statements were articulated as strong problem definitions.

Newspaper articles often included text suggesting immediate actions to address problem interactions with bears (Table B11). The most frequently mentioned was relocating bears. Relocating bears also was the most common type of FWC action described in FWC quotes in newspaper articles (Table B11), perhaps reinforcing the idea that bear relocation is a solution to human-bear conflicts.

Immediate responses/actions suggested in newspaper articles were not stated as broad, long-term, or collective solutions to problem human-bear interactions. In other words, few newspaper articles contained text that could be considered a solution frame. Articles were almost entirely episodic, so problem and solution frames were generally absent. In contrast, FWC documents did have clear problem framing statements, and also included statements that were framed as broad, long-term, or community-level solutions to those collective problems (Tables B23-B24).

4.1.5. FWC and other sources

FWC appears frequently as an information source in newspaper articles about black bears (FWC was the most common source by far). Law enforcement and "unnamed wildlife officials" were

the only other sources mentioned multiple times. Sixteen different FWC staff members are quoted (Table B15).

FWC staff members were quoted most often on problem prevention recommendations (23 counts), solutions/immediate actions to address bear-related problems (21 counts), and negative impacts on bears (17 counts) (Tables B8, B9, B11).

Articles that mention FWC actions most frequently mention relocation or euthanization. This finding is a function of the fact that many stories focus on a bear incident in a residential neighborhood, where relocation or euthanization are being discussed.

FWC quotes are less likely to focus on negative attributes or negative impacts on people. FWC quotes about negative impacts on bears are almost entirely related to a bear poaching/illegal bear kill incident.

4.2. Coyote

All findings from analyses of coyote newspaper articles (Tables C1 – C12) and FWC documents (Tables C13 – C21) appear in Appendix E. Findings highlights are summarized here (Box 2).

Box 2: Coyote key findings:

- Newspaper content contained a mix of positive and negative coyote descriptors, but contained more negative descriptors in comparison to black bear stories.
- One negative impact was a dominate theme in newspaper stories—concern about coyote threats to pet safety. Very few articles (predominantly FWC quotes) mentioned positive impacts associated with coyotes.
- Problem prevention or response actions were a frequent element in newspaper articles, with actions to reduce or prevent threats to pets being the most common category of prevention information.
- Many newspaper articles contained problem or solution framing statements. Food attraction was the most common problem frame, but many different frames appeared.
- Findings reflect a rapidly emerging public issue. Terms describing coyote status were not consistent. Articles sited a wide array of sources, including many non-FWC sources, and most FWC documents were produced by non-FWC sources.

4.2.1. Coyote descriptors

Newspaper articles contained a mix of positive and negative coyote descriptors (Tables C1-C3). On one hand, articles often described coyotes as timid, shy, adaptable, intelligent, opportunistic, and dog-like. FWC documents contained similar neutral and positive descriptors (i.e., in FWC documents coyotes are frequently described as timid, adaptable, nonthreatening omnivores) (Table C16). On the other hand, coyote articles often included negative or threatening descriptors, calling coyotes bold, aggressive, predators, ambush predators, or killers (Table C3). Although a few positive attributions appear in newspaper articles (e.g., coyotes as symbols of the American southwest), negative attributions were 4 times as common as positive attributions (in stark contrast to black bear articles) (Table C3). Negative attributions included depiction of coyotes as a nuisance, a problem, or description of coyotes as troublesome, lurking, tricky, intimidating, frightening, or alarming. The frequency of negative terms (e.g., nuisance, killed, threat), as well as the focus on the potential for coyotes to attack, kill, or eat pet cats, can be visualized in a word cloud created from coyote article text (Figure 2).

Figure 2. Word cloud generated from word counts in sample of coyote articles, 2011-2013.

4.2.2. Effects and impacts

Threats to pets (i.e., episodes involving attacks on pets) were the most common type of negative interaction or impact mentioned in articles. This applies to FWC quotes, as well (Table C4). Coyote depredation on livestock also was mentioned multiple times, but most of those mentions were tangential to the main topic of the article (i.e., were just a passing mention that coyotes can kill livestock). Threats to pets, potential for pet attacks, or actual pet attacks were the main theme in a large proportion of articles, a fact that can be gleaned in part from a reading of article titles

(Table C10). To the degree that newspaper articles during the period were exerting an agenda setting effect, that effect was likely to be raising awareness/concern about coyote threats to pets.

FWC documents contain numerous mentions of coyote threats to pet and human safety (Table C17). Though risk to humans is low, FWC documents devote attention to those concerns, perhaps making the risks seem higher than they are.

Articles contained 55 mentions of coyote vocalizations (Table C3). While some people enjoy hearing coyote vocalizations, others become concerned about pet safety when they realize that coyotes are nearby. Newspaper coverage suggests that between 2011 and 2013, simply hearing coyotes produced a negative psychological impact for some Floridians concerned about safety of small pets or young children.

Very few articles mention positive impacts of any kind (only 15 positive impacts were mentioned). Many of the mentions of positive effects came from FWC quotes in newspaper articles (Table C5). FWC documents also discuss positive impacts coyotes can have on the environment and on people (Table C18).

Suggestions of trapping or shooting coyotes could be considered negative impacts on coyotes, and those actions were mentioned very often in newspaper articles. But other types of negative impacts on coyotes (e.g., being hit by motor vehicles, loss of habitat, poisoning associated with exposure to rodenticides) are almost never mentioned (Table C6), suggesting that public awareness of, or concern about, negative impacts on coyotes were low.

4.2.3. Problem prevention messages

Problem prevention or response actions were a frequent element in articles, with 196 mentions in this category (Table C7). Actions to reduce risk to pets were the most frequent category mentioned. Hazing (i.e., taking action to instill wariness of humans) and removing food also were commonly mentioned. FWC quotes mirror this pattern (Table C19). FWC documents offer about 113 statements on problem prevention. The most common types of action recommendations relate to protecting pets (n=28), removing food attractants (n=22), and hazing actions (n=15). These findings suggest that FWC messages about coyote problem prevention were being transmitted through newspaper articles with some regularity.

4.2.4. Problem and solution messages

We found many newspaper text passages that could be interpreted as problem frames, but the most important pattern we observed was that several different problem frames were offered (Table C8). FWC documents contained 46 statements that we interpreted as problem frames. The most common frame was that food conditioning leads to problem interactions (n=14), but 13 other problem definitions in several themes appeared, as well (Table C20). This could mean that the problem(s) are seen as having multiple origins, or it could be that the problem(s) are still ill defined. It could be useful to FWC to integrate several of those problem definitions into a single, consistent narrative statement.

We came to similar conclusions with regard to both problem framing and solution framing; many solutions are proposed, suggesting that responses are less well defined for coyotes when compared to responses to problems with bears (Table C9).

FWC documents contained 66 statements on actions/steps to reduce problems, which we placed into 13 different categories (Table C21). In most of these, the text suggested actions for individuals, not collective solutions to negative interactions with coyotes (i.e., they were not stated overtly as a solution frame). It may be useful for FWC to consider how or if it wants to promote more consistent and explicit solution framing.

4.2.5. FWC and other sources

FWC appears frequently as an information source in coyote newspaper articles (the most common source by far, with a count of 118). Pet owners also were frequently cited (66 counts). Compared to black bear articles, coyote articles had quotes from a wider range of lay people experiencing problems and experts other than FWC. The voices in coyote articles came from a broader range of perspectives.

FWC documents used to provide information on coyotes came from a range of mainly non-FWC sources (Table C15). It may be useful for FWC to create more of its own internal documents on coyotes, so that messages about living with coyotes in Florida present a unified message. Some of the current materials distributed by FWC were developed by wildlife management agencies in western states, and may refer to practices that are not suited for or currently permitted in Florida.

4.3. Bats

All findings from analyses of bat newspaper articles (Tables BT1 – BT12) and FWC documents (Tables BT13 – BT21) appear in Appendix F. Findings highlights are summarized in Box 3.

Box 3: Bat key findings:

- Newspaper articles generally described bats in positive or neutral terms. Articles contained as many attributions of positive as negative traits.
- Text describing positive impacts (associated with benefits bats provide through insect control) appeared 4 times as often as text describing negative impacts (primarily risk associated with rabies transmission to humans).
- Newspaper articles were primarily about bat natural history or bat conservation and seldom focused on human-bat problems related to bats in human dwellings. Thus, articles generally did not contain problem prevention information.
- Articles generally did not discuss human problems with bats; because problems were not often discussed, problem and solution frames were largely absent from newspaper articles. Even FWC documents focused more on bat conservation issues than on problems bats create for people.

4.3.1. Bat descriptors

The most common themes in the newspaper articles analyzed were concern about transmission of rabies to humans, bat conservation, and bats as insect eaters. Of the 53 articles analyzed, 16 focused on events that raised concerns about rabies transmission, 15 focused on construction of bat towers, 11 focused on bat festivals or other information/education events, and 8 focused on bat conservation or natural history. Descriptor words and phrases in newspaper articles generally depicted bats in positive or neutral terms. Approximately 50% of descriptors focused on general traits (e.g., flying mammal), feeding habits (e.g., voracious insect eaters), biology (e.g., roosting, hibernation), or population size and distribution (Tables BT1 - BT2). Articles contained as many positive as negative attributions (Table BT2).

A word cloud diagram generated from text in newspaper articles (Figure 3), visually displays the prominence of messages about bats as potential rabies vectors, but also as voracious eaters of insect pests, especially mosquitoes.

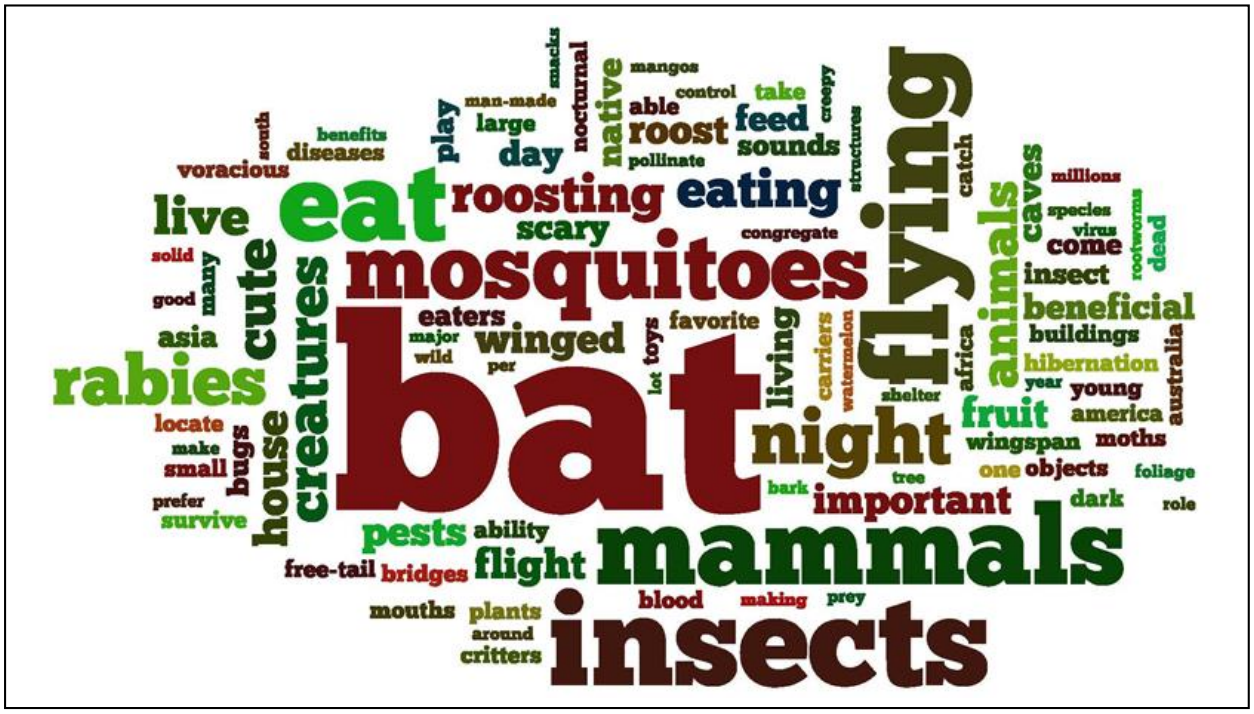

Figure 3. Word cloud generated from word counts in sample of bat articles, 2011-2013.

4.3.2. Effects and impacts

Newspaper articles contained 85 comments on positive impacts that bats have on people or the environment (Table BT4). Over 50 of those related to benefits of bats feeding on insects. Text describing positive impacts (associated with benefits bats provide through insect control) appeared 4 times as often as text describing negative impacts (primarily risk associated with rabies transmission to humans) (Tables BT3-BT4). Text describing positive impacts that bats

have on people or the environment were also about 3 times as common as statements about negative impacts on bats (e.g., white-nose syndrome, loss of habitat for bats) (Table BT5).

FWC documents concentrated mainly on negative impacts on bats (conservation issues), and the positive impacts bats have on people and the environment. Negative impacts of bats on people were mentioned less frequently (Tables BT16-BT18).

4.3.3. Problem-prevention messages

Problem-prevention messages were uncommon in bat-related newspaper articles (only 20 of them in all) (Table BT6). Problem prevention messages in FWC documents focused on actions people can take to limit human or pet exposure to bats or rabies (Table BT19).

4.3.4. Problem and solution messages

The topic of bats in human dwellings received little media attention, so it is not surprising to find few statements that could be interpreted as problem or solution frames in newspaper articles (Tables BT7 – BT8). Articles were more likely to make statements about why bat populations were imperiled, rather than statements about why humans have problem encounters with bats. In a few instances, articles suggested that bats enter human dwellings because their natural roosting areas are disappearing; in a few other cases articles suggested that problems with bats were created by a lack of knowledge or fear (Table BT7).

FWC documents contain text that frames reasons for bat conservation problems (i.e., habitat loss), but those documents do not contain text that clearly articulates why humans have problems with bats. Suggestions to take actions to prevent bats from entering or roosting in homes was the most common type of problem solution offered in FWC documents (Table BT20). In some instances, documents mention that bats can enter buildings accidentally, or are in buildings because they return to the same roost each year. In other cases, that advice is offered in FWC documents without stating why bat problems exist.

4.3.5. FWC and other sources

FWC sources were seldom quoted in bat-related newspaper articles. Only one specific FWC staff member was identified by name. White-nose syndrome was the single topic on which FWC staff were quoted most often (8 times) (Table BT5).

Most of the documents distributed by FWC about bats were produced by other organizations (Table BT14).

4.4. Lionfish

All findings from analyses of lionfish newspaper articles (Tables L1 – L11) and FWC documents (Tables L12 – L19) appear in Appendix G. Findings highlights are summarized in Box 4.

Box 4: Lionfish key findings:

- Newspapers portrayed lionfish as a nonnative, voracious, invasive species that is dangerous to humans and native marine life in Florida. Negative attributions (e.g., threatening) about lionfish were about 4 times as prevalent as positive attributions (e.g., beautiful).
- Newspaper articles focused heavily on: (1) the negative ecological impacts associated with presence of lionfish throughout Florida, and (2) activities designed to harvest, control, or eradicate lionfish.
- FWC press releases and documents focused on promoting, coordinating or facilitating lionfish harvest or harvest events.

4.4.1. Lionfish descriptors

Descriptions of lionfish portray a nonnative, invasive marine animal that is colorful and ornate, but dangerous, both to humans and native marine life in Florida (Table L1 - L2). A typical article contained description about the animal's physical traits (especially coloration and poisonous spines), fecundity, and voracious eating habits. Negative attributions (e.g., threatening, dangerous) were about 4 times as prevalent as positive attributions (e.g., beautiful, ornate) (Table L1 - L2). The prominence of text describing lionfish as venomous, invasive, predators on native species is apparent in the word cloud generated from article text (Figure 4).

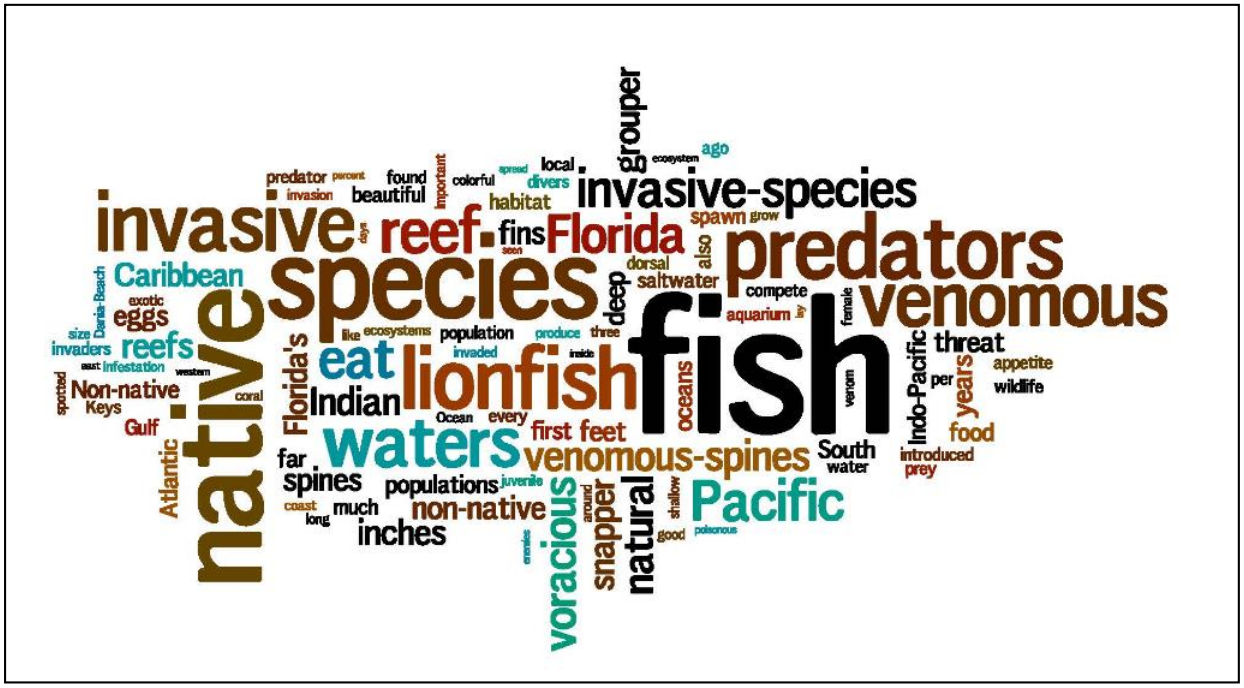

Figure 4. Word cloud generated from word counts in sample of lionfish articles, 2011-2013.

4.4.2. Effects and impacts

Newspaper articles focused heavily on the negative ecological impacts associated with presence of lionfish throughout Florida. To a lesser extent, articles mentioned that the toxic spines of lionfish represented a human safety risk, predominantly for recreational divers and anglers (Table L3). Articles also prominently featured discussion of efforts to kill or eradicate lionfish. For purposes of coding, these interactions with humans were considered negative effects or impacts on lionfish. Because of this coding logic, the analysis indicated that text describing negative impacts on lionfish were a prominent feature in newspaper articles.

4.4.3. Problem and solution messages

The most common problem frame offered in newspaper articles was that lionfish populations were causing ecological harm because they had no natural predators in Florida (Table L6). Newspaper articles suggested a variety of solutions to this problem. Many solutions involved efforts to encourage greater lionfish harvest (via liberalized harvest rules and regulations, or harvest events) (Table L7). Efforts to increase awareness of the problem and teach sport divers to harvest lionfish most efficiently were also commonly suggested.

FWC had just two documents related to lionfish (i.e., a brochure encouraging divers to harvest lionfish and findings from a lionfish summit). The lionfish summit report included a range of proposed solutions similar to those offered in newspaper articles (Table L18). Some newspaper articles and the FWC lionfish summit report mention a need for more research and public education.

4.4.4. FWC and other sources

FWC staff were quoted most frequently about liberalizing lionfish take rules or regulations. Seven FWC staff members were quoted (fewer spokespeople than for bear- or coyote-related newspaper articles). Messages in FWC materials, including press releases, were uniform and focused almost entirely on promoting lionfish removal activities or events, or raising awareness of the need for and means by which recreational divers can remove lionfish.

4.5.Tegu

All findings from analyses of tegu newspaper articles (Tables T1 – T13) and FWC documents (Tables T14 – T20) appear in Appendix H. Findings highlights are summarized in Box 5. We found very few (only 11) high content tegu-related articles in newspapers, and 9 of the 11 were published in 2013.

Box 5: Tegu key findings:

- Tegu issues received very little substantive coverage (i.e., only 9 high-content articles published in 3 years).
- Articles described interesting physical traits of tegu (e.g., large size, color, sharp teeth) and frequently mentioned that tegu are exotic, were probably established from escaped pets, and may threaten native wildlife.
- Tegu articles emphasized negative ecological impacts associated with feeding habits.
- Nine of 11 problem-prevention messages came from FWC quotes. FWC sources encouraged people to visit the FWC website to learn more about tegu, asked people not to release pet tegu, or provided guidance on how to or not to handle tegu.
- Only five statements were interpreted as problem frames; all 5 asserted that releasing pet tegu was the reason for negative impacts associated with tegu.
- Multiple solutions were offered in articles. The most frequent solution suggested in FWC quotes was trapping and removing tegu from the environment.

4.5.1. Tegu descriptors

The majority of tegu descriptors were simply about tegu appearance and size (e.g., can be 3-4 feet in length, are lizards, have sharp teeth) (Tables T1 - T2). In addition to the species name (Argentine black and white tegu), articles frequently mentioned that tegu are exotic, were probably established from escaped pets, and may threaten native wildlife. These emphases are quite apparent in a word cloud generated from text in tegu articles (Figure 5). (Note: Word size is larger than in figures 1-4 because there were only 11 tegu articles and fewer words overall).

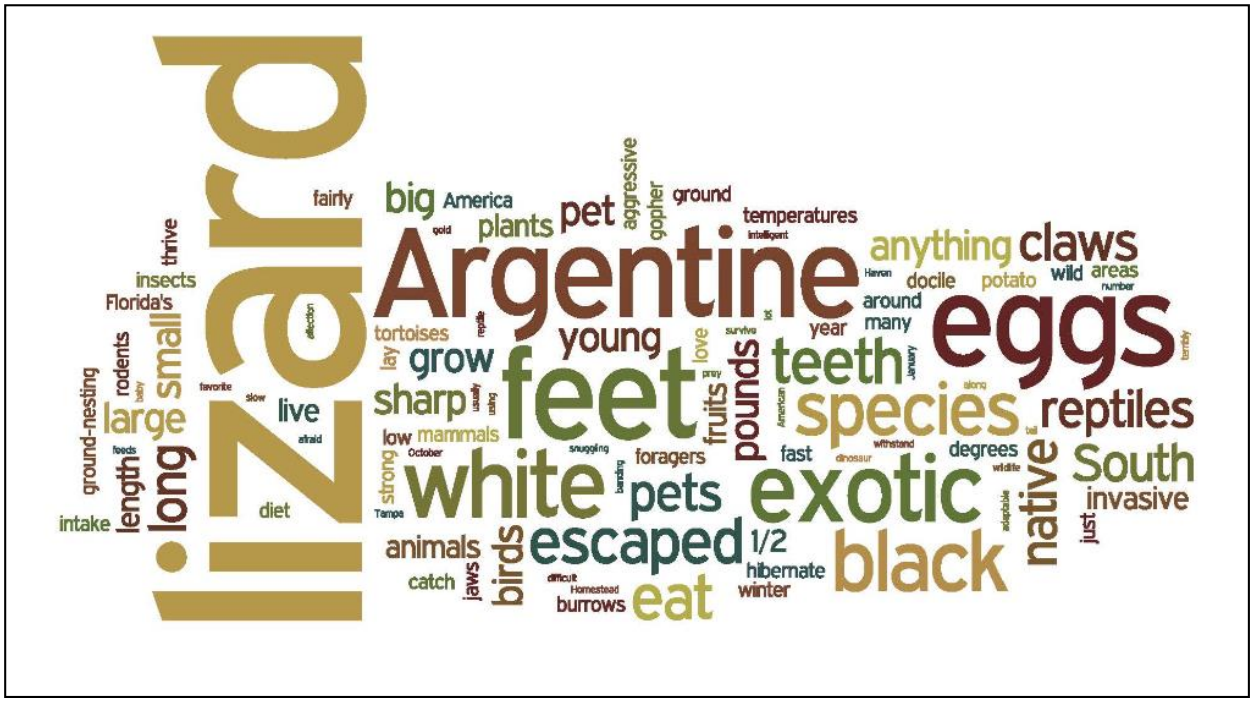

Figure 5. Word cloud generated from word counts in sample of tegu articles, 2011-2013.

4.5.2. Effects and impacts

As was the case with lionfish articles, tegu articles placed the highest emphasis on negative ecological impacts associated with feeding habits (Table T3). Articles also noted the positive impacts that tegu produce for people as pets (Table T5). FWC had 8 internal documents related to tegu, which focused on raising awareness of tegu and the impacts they may have on native wildlife.

4.5.3. Problem-prevention messages

Nine of 11 problem-prevention messages came from FWC quotes. FWC sources encouraged people to visit the FWC website to learn more about tegu, asked people not to release pet tegu, or provided guidance on how to or not to handle tegu (Table T7).

4.5.4. Problem and solution messages

Only five statements were interpreted as problem frames; all five asserted that releasing pet tegu was the reason for negative impacts associated with tegu (Table T8). Multiple solutions were offered in articles. The most frequent solution suggested in FWC quotes was trapping and removing tegu (Table T9).

4.4.5. FWC and other sources

Nine different FWC sources were quoted in tegu articles. FWC quotes encouraged residents to get more information about tegu, and report them or trap them when encountered. FWC materials also encourage people to report tegu sightings and trap tegu when found (Table T19).

4.6. Monkeys

All findings from analyses of monkey-related newspaper articles (Tables M1 – M13) and FWC documents (Tables M14 – M23) appear in Appendix H. Findings highlights are summarized here.

Box 6: Monkey key findings:

- Newspaper coverage focused on only a few situations (i.e., repeated attempts to capture one individual monkey, interactions with monkeys in a colony near Silver Springs).
- Articles included anthropomorphic descriptions of monkeys that were escaped pets, or were regularly fed by a local resident.
- Articles were as likely to mention positive impacts on people (e.g., monkeys are interesting to tourists) as they were to mention negative impacts on people (e.g., aggressive monkeys may bite).
- Mention of negative impacts on monkeys was as common as mention of negative impacts on people.
- Articles contained 95 statements referring to what Floridians can do to address problem interactions with monkeys. Conflicting solution frames are offered. About half of the 95 statements suggest capturing/trapping and removing monkeys. Many of the remaining statements voice opposition to trapping and lethal control of monkeys as a response to problem interactions.

We found few (only 29) high content monkey-related articles in newspapers. Most articles (19) were published in 2012 and many chronicled interactions before and after capture of a single individual dubbed the "mystery monkey" by journalists. When interpreting these findings it is important to keep in mind that newspaper coverage between 2011 and 2013 focused on only a few situations (i.e., interactions with the mystery monkey or interactions with monkeys in a colony near Silver Springs).

4.6.1. Monkey descriptors

About 100 descriptors related to actions or behaviors of a particular monkey, especially well-known individuals like the "mystery monkey" (Table M1). Articles included anthropomorphic descriptions of monkeys that were escaped pets or were regularly fed by a local resident.

Particular attention to Florida's "mystery monkey" is apparent in the word cloud created with text from all monkey articles (Figure 6).

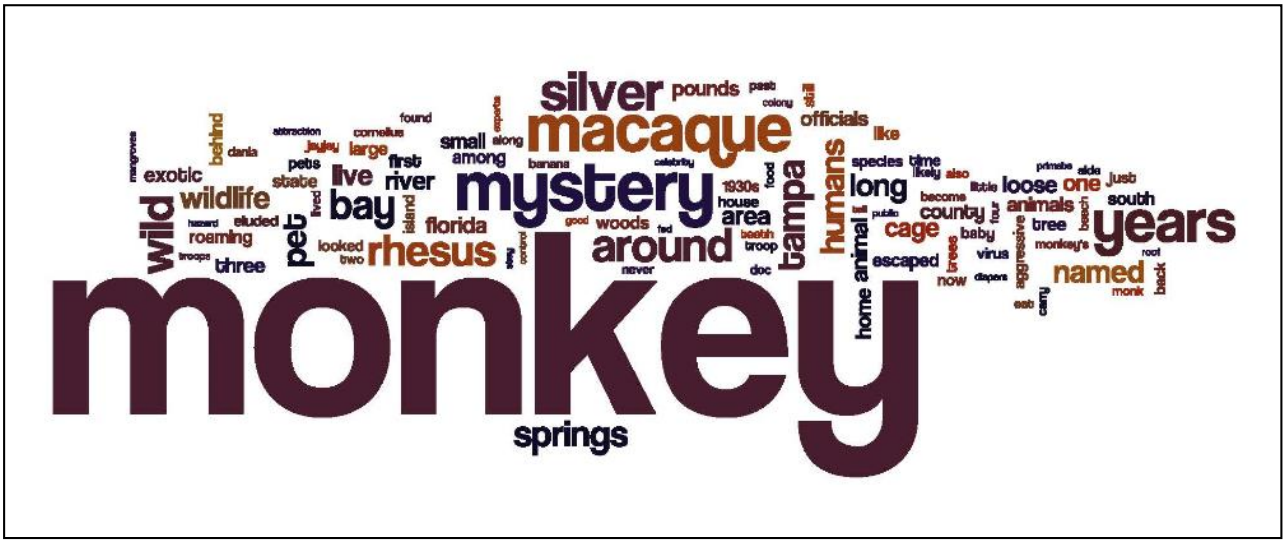

Figure 6. Word cloud generated from word counts in sample of monkey articles, 2011-2013.

4.6.2. Effects and impacts

Articles were as likely to mention positive impacts on people as they were to mention negative impacts on people (Table M4 - M5). Threats to human safety associated with aggressive monkeys was the most commonly mentioned negative impact on people; monkeys as a tourist attraction were the most commonly mentioned positive impact on people. Mention of negative impacts on monkeys was as common as mention of negative impacts on people (Table M4, M7). Articles mentioned monkeys being trapped, killed, sold to research labs, or suffering psychological trauma due to human actions (Table M7).

FWC documents (6 in all) convey messages that presence of monkey colonies represents a threat to human health and safety (Table M18).

4.6.3. Problem-prevention messages

Only 9 mentions of problem-prevention information appeared in newspaper articles. The most common recommendation made was not to feed monkeys (Table M8).

4.6.4. Problem and solution messages

Threats of monkeys biting people or transmitting disease to humans were identified as problems in newspaper articles, but articles contained very few problem framing statements. A few articles mentioned that habituation to humans may be the reason why negative human-monkey interactions are occurring in Florida (Table M9).

Text in newspaper articles document the controversial nature of responding to negative impacts associated with human-monkey interactions. Articles contained 95 statements referring to what Floridians can do to address problem interactions with monkeys. Approximately half of those statements mention capturing/trapping and removing monkeys as a solution. Many of the remaining statements suggest opposition to trapping and lethal control of monkeys as a response to problem interactions (Table M10).

FWC documents clearly state that negative human-monkey interactions are a problem in Florida because people feed monkeys (Table M21). FWC documents contain 85 statements about actions that collectively represent a solution to problem interactions with monkeys (Table 22). Fifty of those statements relate to trapping or removing monkeys from the environment. Most (74 of 85) suggested actions involve some kind of management of monkey populations (i.e., removal of individuals or groups of animals by trapping and euthanizing animals or placing them in captivity). Few suggestions focused on addressing other aspects of the management environment (i.e., habitat or human behavior).

4.6.5. FWC and other sources

Nine different FWC staff members were quoted in monkey-related articles to provide information on general traits, monkey population and distribution information (Table M1, M4, M10). FWC staff members mention that monkeys can be aggressive and pose a human health threat. FWC staff are quoted 10 times recommending trapping or capture to remove individual monkeys or groups of monkeys from the environment (Table M10).

4.7. Comparison of newspaper content across species

Insights from the newspaper content analysis can be clarified through side-by-side comparisons across species groups. To aid comparisons, we calculated the percentage of coded content for each species that fell into one of 6 categories (positive impact on humans/environment, negative impact on humans/environment, negative impact on the species, problem prevention actions, problem frames, and solution frames) in newspaper articles. We display the results of those comparisons both numerically (Table 5) and graphically (in Figures 7 and 8).

Table 5. A comparison of newspaper coverage showing percentage of coded material that fell into one of 6 categories, for bat-, bear-, coyote-, lionfish-, tegu-, and monkey-related newspaper articles between 2011 and 2013.

Content category	Native or naturalized species			Nonnative or invasive species		
	Bat	Bear	Coyote	Lionfish	Tegu	Monkey
	(%)			(%)		
Positive impact on humans or environment	41	3	2	0	10	12
Negative impact on humans or environment	18	14	24	36	49	20
Negative impact on species	13	23	1	22	13	20
Problem prevention actions	10	30	33	1	3	4
Problem frames	3	5	17	8	5	2
Solution frames	15	25	23	33	20	42
Total	100	100	100	100	100	100

Native or naturalized species: About a third of the coded content in both bear-related and coyote-related articles was problem-prevention information. Both bear and coyote articles also contained a substantial amount of text on actions that could be taken to solve stated problems (solution frames). Coyote-related articles were more likely than bear-related articles to contain problem framing statements, though as stated earlier, multiple problem frames were promoted in coyote-related articles. It also is noteworthy that problem framing was largely absent in all three groups.

In contrast to bear-related and coyote-related articles, bat-related articles emphasized positive impacts that bats have on humans and the environment, and less emphasis on problem-prevention actions or solution framing. These findings may be reflecting the fact that problem interactions with bears and coyotes were more newsworthy than problem interactions with bats.

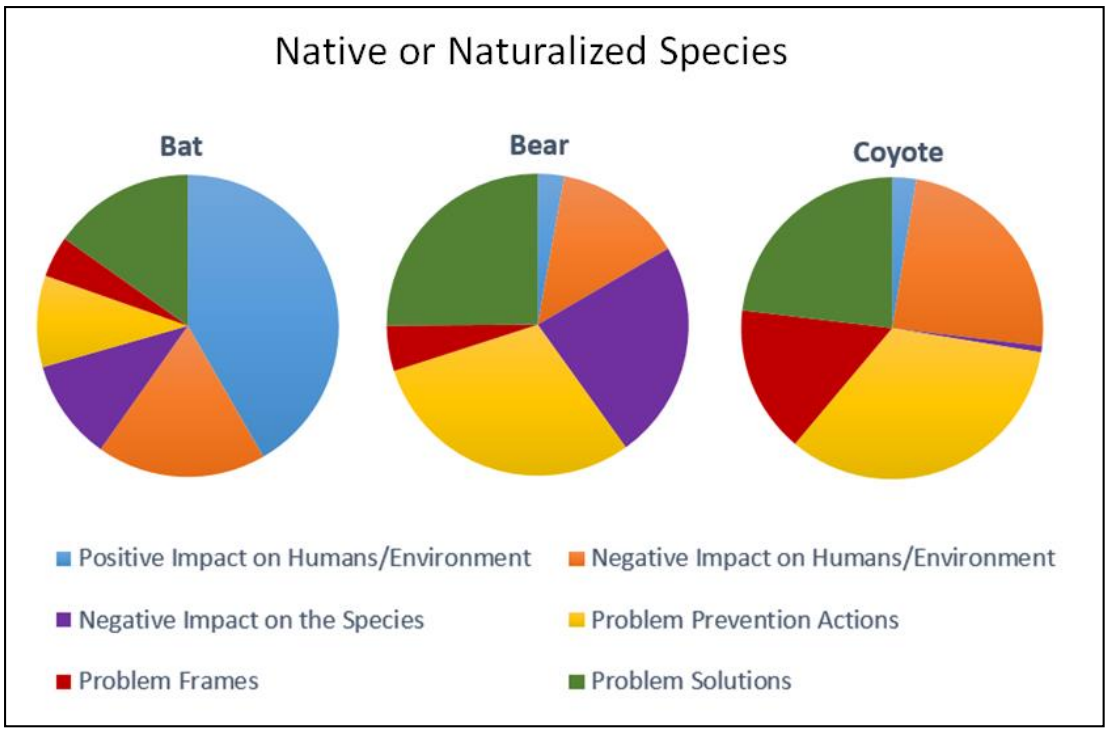

Figure 7. Pie charts showing percentage of total coded material that fell into one of 6 categories for sampled bat-, black bear-, or coyote-related newspaper articles between 2011 and 2013.

Non-native or invasive species articles: Lionfish-related and tegu-related articles emphasized negative impacts on the environment and actions that represented solutions to those problems. Articles emphasized the ecological harm that invasive species can cause and focused on efforts to control or eradicate these species. As was the case with native species, problem framing was largely absent when nonnative species were discussed (problems were discussed, but in many cases articles did not include explanation of why those problems were occurring).

Monkey-related articles represent a different conflict issue—a human health risk associated with exotic primates. The largest category of content in monkey-related articles was proposed solutions to the problem of threats to human health. Another trait distinguishing monkey-related articles was that they sometimes included public concerns about lethal control of (negative impacts on) monkeys. Articles about lionfish and tegu did not include such concerns even though lethal removal with the intent to locally eradicate those species was commonly mentioned.

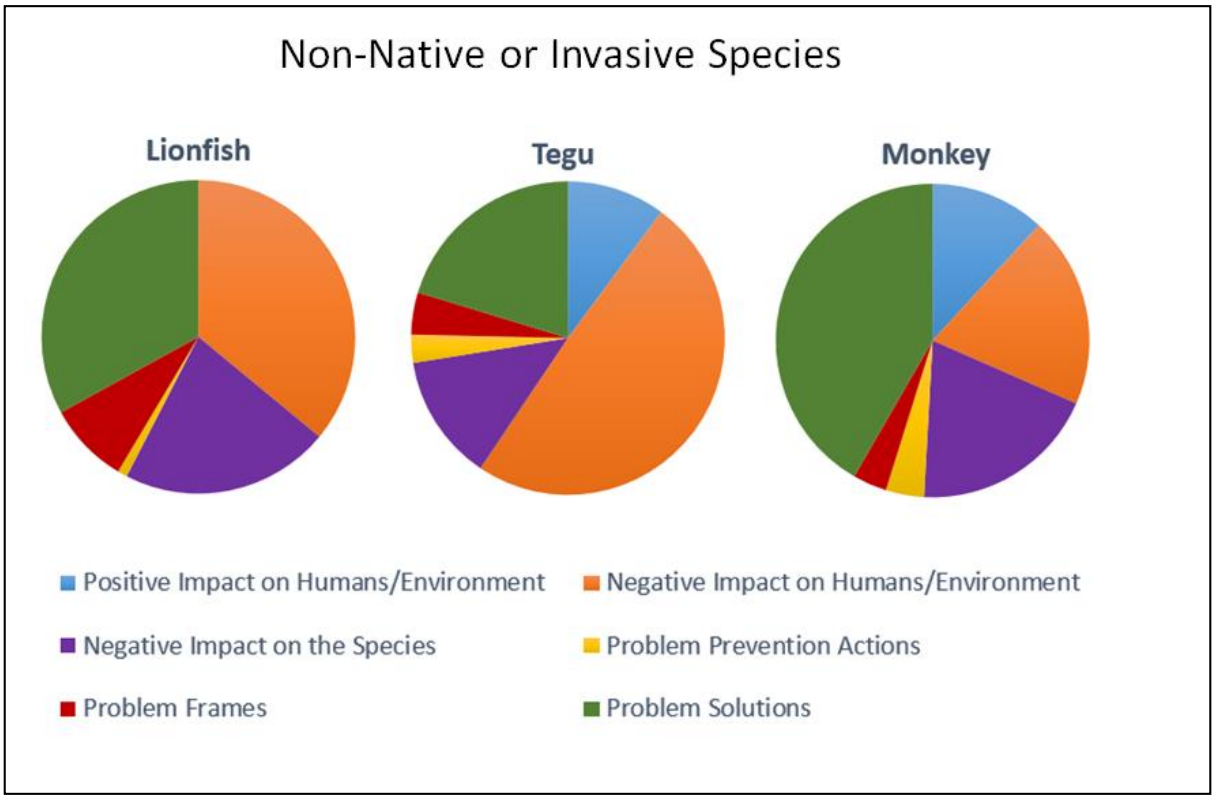

Figure 8. Pie charts showing percentage of total coded material that fell into one of 6 categories for sampled lionfish-, tegu-, or monkey-related newspaper articles between 2011 and 2013.

5. FWC STAFF INTERVIEW FINDINGS

One member of the research team interviewed FWC staff members, to develop a richer understanding of FWC communication concerns and information needs that could be addressed effectively through message testing experiments (i.e., Study Task II). Interviews were completed with 12 FWC staff members, following an interview guide developed in collaboration with the contact team. Interview comments were summarized under headings representing questions in the interview guide.

By synthesizing comments across interviews, we identified 5 general communication concerns expressed by FWC staff (Box7). These concerns can be construed as potential message elements or components to be addressed in Study Task II.

Box 7: FWC concerns related to communication about problematic human-wildlife interactions

1. Increasing problem recognition and improving problem definition among Floridians.
2. Developing reasonable/accurate risk perceptions among Floridians and visitors.
3. Developing realistic/accurate expectations among Floridians for FWC response to problems and role of FWC in wildlife problem management.
4. Motivating problem prevention or mitigation behavior among Floridians.
5. Adoption of a sustainable human-wildlife coexistence ethic among Floridians.

5.1. Increasing problem recognition and improving problem definition

FWC staff expressed concern that many Florida residents and visitors do not realize that particular negative ecological, economic, health and safety, or other interactions are occurring (or are possible), and are impacting individual people and communities. Also, staff were concerned that some people who recognize the potential for a problem may not understand why it occurs, either the general conditions that lead to a problem (the drivers) or the specific situations that cause a problem to surface. This is a concern because it is assumed that people will not take actions to address these issues, or support related management actions, unless they recognize that a problem exists.

5.2. Developing reasonable/accurate risk perceptions

Staff were concerned about promoting accurate perceptions of risks associated with wildlife in Florida, particularly the focal species in this research. FWC staff members were concerned that citizens' perceptions commonly are either amplified or attenuated inappropriately for the actual situation. Their perception is that people often misunderstand the nature, impact or probability of hazards associated with wildlife. The situation is exacerbated when in some cases these aspects of risk are not known by FWC with respect to people, the environment, the species in question, or other species. For example, perceived threats to pets from coyotes may far exceed actual risk for some residents. In other cases, residents may not appreciate the real risk associated with food conditioning a backyard bear. Creating more accurate risk perceptions could contribute to personal behavior changes that reduce problem interactions with wildlife.

5.3. Developing realistic/accurate expectations for FWC response.

Multiple FWC staff members report that FWC is frequently contacted by people who expect FWC to respond to any interaction with wildlife that they perceive as potentially problematic (i.e., had an expectation of a site visit or "curb-service" by FWC). This reflects both a misperception of FWC capacity and of its role with respect to intervention to influence human-

wildlife interactions. Some interviewees believed that FWC response to alligators, established following restoration of the species in Florida and continuing to the present, may have established an expectation among Floridians that FWC responds to any wildlife call by dispatching staff for a site visit. Staff members expressed concern that residents do not realize that circumstances warranting site visits are quite limited.

Staff members also expressed concern about public expectations related to lethal removal of animals. A challenge for FWC is gaining public acceptance that animal removal is sometimes necessary, and relocation or placement of the animal in captivity often is not possible.

5.4. Motivating problem-prevention or mitigation behavior among Floridians.

Certainly in cases where a problem is not recognized by the public, but even in many cases where it is, people may not be motivated to take or expect others to take problem-prevention measures. Motivating individuals to take action to make garbage unavailable to wildlife is one example.

This is an issue with respect to both individual and community behavior (a neighborhood or a local government). It is unclear whether this situation reflects lack of awareness of actions that can help, lack of confidence in applying them, or lack of certainty that they will be effective (or cost effective). Answers to some of these questions might be gleaned from message-testing experiments.

5.5. Adoption of a sustainable human-wildlife coexistence ethic among Floridians.

Convincing Floridians that they should learn to coexist with native and naturalized wildlife is a major goal of the Wildlife Assistance Program, and FWC more generally. One interviewee said, "Coexistence means making people aware of what wildlife is there and how to prevent problems with it -- teaching people how to keep themselves and their pets safe, while realizing that there is wildlife here in Florida." But multiple staff members noted that coexistence means different things to different people. Given the central importance of this concept, it may be useful to test how presentation of, or definition of, the coexistence concept affects beliefs, attitudes or behavioral intentions. For example, is acceptance of the coexistence concept a function of whether coexistence includes lethal removal of individual problem animals?

6. CONCLUSIONS

6.1. Media messages sent and agenda setting

This study documents key messages about wildlife conflict species that were being communicated to Floridians through newspaper articles between 2011 and 2013. Mass communication studies have demonstrated a relationship between the amount of media coverage devoted to an issue and the relative importance that audiences place on that issue. These agenda-setting effects can result when salience of an issue is raised through media exposure.

The amount of media coverage we found on three particular topics –reducing coyote-related risks to pets, providing nonlethal responses to negative human-bear interactions, and

controlling or eradicating lionfish – suggests that exposure to news media between 2011 and 2013 could have prompted Floridians to place those topics on the public agenda. Public expectations for FWC response to these issues, whether reasonable or not, may have been elevated by the way media have covered human interactions with these species.

6.2. Program maturity and problem framing

This analysis of FWC program documents and newspaper coverage support a conclusion that newspaper coverage related to the focal species is in part a reflection of wildlife management program maturity. Of the six species included for analysis, black bear management is arguably the most mature program. FWC has invested significant resources in the black bear management program for many years and that investment has resulted in a comprehensive set of internal documents, press releases that support program objectives, consistent problem framing, and consistent messages about problem-prevention actions. Problem prevention messages related to black bear were communicated in FWC materials (including about 75% of press releases), consistently transmitted by FWC spokespersons, and were picked up with relative accuracy in newspaper articles (this could be considered a strength of newspaper articles from an FWC perspective).

Problem-prevention information is provided in FWC documents about coyotes and those problem-prevention messages were transmitted in newspaper articles, but coyote expansion is a relatively recent phenomenon and FWC is still developing a comprehensive strategy for response to negative human-coyote interactions (FWC 2012a). The fact that this issue is still in an emerging phase may help explain why a unified problem frame is not apparent in FWC documents and was not being transmitted in newspaper articles between 2011 and 2013.

Monkey-related issues also were in an emerging phase, without clear definition of FWC roles being expressed in newspaper reports or FWC documents during the study period. Communication about monkeys did not seem to be driven by the few FWC statements and documents offered on monkeys between 2011 and 2013. That pattern may change in the future with maturation of FWC policies and procedures in this arena.

6.3. General absence of problem framing statements

Our analysis suggests that problem framing was often absent in sampled newspaper articles between 2011 and 2013. This is consistent with (or not surprising given) our finding that most high content newspaper articles we analyzed were episodic, not thematic.

Lack of thematic coverage about black bear (or coyote) issues may reinforce the idea that negative human bear interactions are a problem created by individuals and should be solved only by changing individual's behavior. Better problem and solution framing, as offered in FWC documents may communicate the negative human-bear problems are created by collective behavior and require collective or community-based solutions, as well as individual responsibility and behavior change.

6.4. Implications for message testing research

Following review and discussion of Task I findings, the contact team decided to focus Study Task II on testing messages to inform attitudes, perceptions, or behavioral intentions related to black bear, coyote, and lionfish. This decision was based on Task I findings that tegu were receiving little media attention, negative human-bat interactions were not being discussed in the media as much as previously expected, and newspaper coverage about monkeys largely focused on efforts to capture a few specific individuals. Concentrating project funding on just bear, coyote, and lionfish messaging will allow more in-depth testing on those topics.

The Study Contact Team reviewed the 5 FWC communication concerns identified in FWC interviews (Box 7) and determined that concern #4 (motivating problem prevention behavior) should be a priority to address in the next phase of this research, with regard to black bear and coyote messaging. Other communication concerns will be addressed through message testing related to lionfish.

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APPENDIX A (NEWSPAPER CONTENT CODING PROTOCOL)

FWC content analysis: Newspaper article coding protocol

1. Description of article

Code name	Explanation of the category	Notes for coders
Title	Article title	• Highlight title of article
Newspaper	Name of newspaper in which article was published	• Highlight newspaper title
Date	Date of article publication	• Highlight publication
Section	Newspaper section in which article was printed	• Highlight section
Length	Word length of article	• Highlight number of words

2. How the species/species group is characterized

a. How is the species characterized by mass media (e.g., as a pest, an invader, an exotic)?

Code name	Explanation of the category	Notes for coders
Descriptor	Individual words, phrases, or sentence fragments describing a characteristic of the species. Also words describing what the species is doing (e.g. coyotes are threatening pets- this would also be coded negative impact on people/environment) It is a descriptor if you can put the word or phrase into the following sentences: 3. Coyotes are [Descriptor]	• Include only the words needed to complete the description • Separate distinct concepts (e.g., if coyotes are described as "adaptable and smart," code those ideas separately.

3. How is discussion about the species being framed?

a. Human-wildlife interactions and effects discussed
   i. What interactions and effects have been highlighted in newspapers?
   ii. Are some effects known to agency or reported in research literature ignored in media reports?

Code name	Explanation of the category	Notes for coders
Negative impact on [species name here]	Words, phrases, sentence fragments that describe a negative interaction or effect on the species. For example the article may mention that the species population or individuals in the population are threatened by land development or habitat destruction, or that they are poisoned, trapped, hit by cars, etc.	• Include only the words needed to complete the description • Separate distinct concepts (e.g., if coyotes are described as "adaptable and smart," code those ideas separately.
Negative impact on people /env	Words, phrases, sentence fragments that describe a negative interaction or effect on people, other wildlife, or the environment. For example, the species has a negative effect on human health, pets, survival of other wildlife species, or entire ecosystems (like coral reefs or the everglades).	• Include only the words needed to complete the description • Separate distinct concepts
Positive impact on [species name here]	Words, phrases, sentence fragments that describe a positive interaction or effect on the species. For example, articles may suggest that building bat houses benefits bats, habitat corridors benefit bears, certain kinds of habitat changes may benefit coyotes, etc.	• Include only the words needed to complete the description • Separate distinct concepts
Positive impact on people / env	Words, phrases, sentence fragments that describe a positive interaction or effect on people, other wildlife species, or the environment/ecosystem. For example, bats eat insects and reduce crop damage, coyotes control rodent populations, people get satisfaction from knowing bears live in their area.	• Include only the words needed to complete the description • Separate distinct concepts

4. Sources mentioned

a. What entities are providing information/opinion about these species, their impacts, and how those impacts are being or should be managed?
b. How often does the Florida Fish and Wildlife Conservation Commission (FWC) appear as a source?

Code name	Explanation of the category	Notes for coders
FWC source	Any FWC representative	• Highlight enough information to identify the source (name, agency, and job position or role in agency if that is mentioned)
Other gov agency source	Representatives of all wildlife, environmental agencies other than FWC	• Ditto
NGO source	Representatives of all nongovernmental organizations	• Ditto
General public source	Anyone in the general public, such as homeowners,	• Ditto
[add others as we go]	Add specific source groups as we go. For example, we may add farmers, hunters, scientists, etc.	• Ditto
FWC quote	Include any quoted material from a FWC representative Also code passages that are attributed to FWC representatives even if they are not direct quotes. A good example of an FWC attribution passage occurs in the article named "1 coyote 2011."	• Highlight the entire passage containing the quote, including source's name/identifying information. The information from the variable "Source.." will also be highlighted here in many instances
Other gov. agency quote	Include quoted material from representatives of all wildlife, environmental agencies other than FWC	• Ditto
NGO quote	Representatives of all nongovernmental organizations	• Ditto

Code name	Explanation of the category	Notes for coders
(add more labels as needed)	*Include all quoted material, but do not include passages attributed to nontechnical sources that are not in quotes.	• Ditto
Problem prevention messages	Passages, especially bulleted lists at the end of an article, with tips on how to prevent problems with coyotes, bats, bears. Examples (these differ from the problem/solution code below in that they are generic messages for how to prevent negative human/wildlife interactions): • Put pet food away • Make noise if the animal approaches you • Go to this website for more information	• If a section appears at the end of an article with problem prevention information, simply mark the entire section and apply the code • You also can mark individual tips that may appear anywhere in the text. Don't try to sort out individual statements, just highlight blocks of text where such information occurs.
Problems/ solutions	Passage that offer opinions on WHY people have problems with each species, or what sources other than FWC think could be done to minimize those problems Examples (code all of these problem/solution I just put which one it is in parentheses so you can see these as examples): • This species is in FL because people released their pets (problem) • There are no natural predators for the coyote in FL so their numbers have increased (problem) • Need to learn to live with them (solution) • Hire a trapper to control the population (solution) • I bring a large stick with me when I walk my dogs (solution)	• Just highlight blocks of text where such information occurs—do not try to separate individual statements.

Research questions from this point on will be addressed in a second phase, synthesis coding (i.e., a process of grouping individual codes into family groups)

5. **How is discussion about the species being framed?**

    a. Themes that are presented to make sense of events reported

        i. What are the predominant frames that journalists use in articles that mention the species/species groups?

6. **Messages conveyed by FWC staff**

    a. What messages from FWC personnel are being communicated through FWC statements quoted in newspaper articles? How is FWC's perspective on the species, impacts, and management being characterized?
        i. The second phase of coding is where we would lump FWC statements into a couple of broad groups. Expected groups include: (1) problem prevention information, (2) descriptions of how the species is impacting people, other wildlife, and the environment, (3) description of agency actions intended to manage the impacts associated with the species

    b. How do those messages compare to the messages communicated in FWC materials?

APPENDIX B (FWC DOCUMENT CODING PROTOCOL)

FWC content analysis: Internal Document Coding Protocol

Description of article

Concept	Description	Codes
Document source	Indicates who authored produced the materials	Example sources: FWC, University of Florida
Document type	Category of document	Example document types: FAQ Document Florida law or regulation General fact document, or information sheet Hazing guidelines, information/education Internal policy, protocol documents Internal report form FWC Management plan Peer reviewed publication Powerpoint presentation for general audiences Public brochure/guide
Title	Article title	• Highlight title of article or text that approximates a title

How the species/species group is characterized

- How is the species characterized by mass media (e.g., as a pest, an invader, an exotic)?

Code name	Explanation of the category	Notes for coders
Descriptor	Individual words, phrases, or sentence fragments describing a characteristic of the species. Also words describing what the species is doing (e.g. coyotes are threatening pets- this would also be coded negative impact on people/environment) It is a descriptor if you can put the word or phrase into the following sentences: 2. Coyotes are [Descriptor]	• Include only the words needed to complete the description • Separate distinct concepts (e.g., if coyotes are described as "adaptable and smart," code those ideas separately. • Use existing codes, calling them "D1" through "D##"

How is discussion about the species being framed?

- Human-wildlife interactions and effects discussed

    i. What interactions and effects have been highlighted in newspapers?
    ii. Are some effects known to agency or reported in research literature ignored in media reports?

Code name	Explanation of the category	Notes for coders
Negative impact on [species name here]	Words, phrases, sentence fragments that describe a negative interaction or effect on the species. For example the article may mention that the species population or individuals in the population are threatened by land development or habitat destruction, or that they are poisoned, trapped, hit by cars, etc.	• Include only the words needed to complete the description • Separate distinct concepts (e.g., if coyotes are described as "adaptable and smart," code those ideas separately. • Code as NI1, NI2, ect
Negative impact on people /environ.	Words, phrases, sentence fragments that describe a negative interaction or effect on people, other wildlife, or the environment. For example, the species has a negative effect on human health, survival of other wildlife species, or entire ecosystems (like coral reefs or the everglades). The species may injure people or kill pets	• Include only the words needed to complete the description • Separate distinct concepts • Code as NI1, NI2, ect
Positive impact on [species name here]	Words, phrases, sentence fragments that describe a positive interaction or effect on the species. For example, articles may suggest that building bat houses benefits bats, habitat corridors benefit bears, certain kinds of habitat changes may benefit coyotes, etc.	• Include only the words needed to complete the description • Separate distinct concepts • Code as NI1, NI2, ect
Positive impact on people / environ.	Words, phrases, sentence fragments that describe a positive interaction or effect on people, other wildlife species, or the environment/ecosystem. For example, bats eat insects and reduce crop damage, coyotes control rodent populations, people get satisfaction from knowing bears live in their area.	• Include only the words needed to complete the description • Separate distinct concepts • Code as NI1, NI2, ect

Problem prevention messages

Code name	Explanation of the category	Notes for coders
Problem prevention messages	Passages, especially bulleted lists at the end of an article, with tips on how to prevent problems with coyotes, bats, bears. Examples (these differ from the problem/solution code below in that they are generic messages for how to prevent negative human/wildlife interactions): • Put pet food away • Make noise if the animal approaches you • Go to this website for more information	• If a section appears at the end of an article with problem prevention information, simply mark the entire section and apply the code • You also can mark individual tips that may appear anywhere in the text. Don't try to sort out individual statements, just highlight blocks of text where such information occurs. • Code as PP1, PP2, ext.
Problems/solutions	Passage that offer opinions on WHY people have problems with each species, or what sources other than FWC think could be done to minimize those problems Examples (code all of these problem/solution I just put which one it is in parentheses so you can see these as examples): • This species is in FL because people released their pets (problem) • There are no natural predators for the coyote in FL so their numbers have increased (problem) • Need to learn to live with them (solution) • Hire a trapper to control the population (solution) • I bring a large stick with me when I walk my dogs (solution)	• Just highlight blocks of text where such information occurs—do not try to separate individual statements. • Split into two groups, code as Sol1, Sol2, and Prob1, Prob2, etc.

APPENDIX C (FWC INTERVIEW GUIDE)

Florida Fish and Wildlife Conservation Commission (FWC) messaging study
FWC Staff Interview Guide

FWC Staff Interview: Initial contact email

(To be used as an initial contact email requesting an interview with FWC staff members identified by the FWC Study Contact Team)

[Note: Initial contact with prospective interview subjects will be made via email invitation from the Chair of the FWC Contact Team. HDRU staff will then make contact with willing participants to schedule interviews, using an email like that below.]

Hello, [FWC staff member name],

My name is Bill Siemer and I'm part of the human dimensions research team at Cornell University that is collaborating with FWC's Wildlife Assistance Program to study your agency communications about problematic wildlife in Florida.

One objective of our study is to identify messages that FWC would like to communicate consistently about different types of wildlife that are involved in human-wildlife conflicts. In addition, there is interest in communicating consistently about FWC's goals for problem wildlife management, which might differ for different categories of wildlife or different kinds of problem situations.

I'm contacting you because [name of FWC staff person who nominated the candidate] told us that you have expertise that could help us plan the message-testing portion of our project**. I am writing to ask if you would be willing to schedule a 30 minute telephone call so that I could ask you a series of open-ended questions on this topic.** Participation in the interview is voluntary, and you can stop the interview at any time. We will keep your identity confidential, and we won't link your name to any of the information you provide.

I look forward to hearing your response. If you are willing to participate in an interview, I will contact you to schedule an interview time and date at your convenience.

Thank you for considering this request.

Bill Siemer
William F. Siemer, Ph.D
Research Associate, Human Dimensions Research Unit
G18 Fernow Hall, Department of Natural Resources
226 Mann Drive, Cornell University
Ithaca, New York 14853
tel: 607-255-2828
email: wfs1@cornell.edu
http://www2.dnr.cornell.edu/hdru/ -- Human Dimensions Research Unit

Florida Fish and Wildlife Conservation Commission (FWC) messaging study
FWC Staff Interview Guide

FWC Staff Interview: Consent script
(To be used during actual telephone interview.)

Interviewee: _____ Phone: _____

Date/Time: _____ Location: _____

Notes: _____

Interview Background & Consent Script

We are asking you to participate in a study designed to help us understand communication about problem species in Florida. This research is sponsored by your agency (FWC), and the results of this interview will help the research team develop and test messages that support FWC's management of problem wildlife.

Participation in this interview is voluntary, and you may choose to stop at any time. We will keep your identity confidential, and we won't link your name to any of the information you provide.

If you would like a copy of the results of our study, I'd be pleased to send them to you upon request. If you have any questions about the research project in general, you can contact Alex Gulde (FWC Wildlife Assistance Program, Tallahassee office,
email: Alexander.Gulde@myfwc.com; telephone 850. 617.9652). You can also reach me by telephone (607.255.2828)or email (wfs1@cornell.edu) if you have follow-up questions.

Consent Questions:

- Do you agree to be interviewed?
- Do you have any other questions before we begin?

Florida Fish and Wildlife Conservation Commission (FWC) messaging study: staff interview guide

Context questions

Thanks for agreeing to speak with me today. As I mentioned earlier, I'm part of the human dimensions research team at Cornell that FWC is working with on a study of problematic wildlife in Florida.

This summer, we will be designing an experiment to test messages that support FWC's management of these kinds of problem wildlife.

Our contact team in FWC asked us to focus on six species or species groups -- coyote, black bear, bats (collectively), monkeys (collectively), tegus, and lionfish. You were identified by our FWC Study Contact Team as having insight useful for the message design task.

Could you briefly summarize your current job position and your responsibilities related to management of these species in Florida?

OK, given your background and expertise, I'd like to focus our conversation on [pick one from this list: (a) FWC's Wildlife Assistance Program, (b) management of problems with native species, (c) management of problems with exotic species, (d) one or more of the featured species / species groups, or (e) working with FWC to communicate with the public]

[Note: Based on their area of expertise, interviewees will be asked a subset of questions in the following categories. The referent for questions may differ (e.g., one interviewee may answer most questions with reference to black bears or endangered native wildlife generally; another may answer questions with reference to lionfish or exotic invasive species generally).]

Messages about FWC's management goals associated with species/ species groups

[**Note:** These questions are not intended to determine how much the interviewee knows about what FWC is doing, but rather are intended to determine what messages the interviewee thinks FWC should consistently communicate about each species group, and FWC's role/responsibility related to addressing problems created by these species groups.

- What management goal or goals do you think FWC should be communicating about [species x, species group y, fish and wildlife that cause problems for people or their pets and livestock, fish and wildlife that are harming native animals or ecosystems]?

Follow-up questions:

- We have come to understand that FWC is trying to communicate an overall goal of coexisting with native wildlife that cause problems. Is that message about coexistence different when communicating about an endangered species, like panther, as opposed to a common species like squirrels or raccoons? How and why? Should they be?

- Coyotes and red fox are described in FWC materials as "naturalized" or having arrived in Florida as part of a natural range expansion. For purposes of communication, are coyote or red fox talked about differently than common native species? If so, what are the differences? If not, do you think nonnatives like coyotes or red fox should be talked about differently than common native species like raccoon or fox squirrels?

- There are some nonnative species in Florida that may not be causing widespread ecological problems, and they may cause few problems to for people. An example species in that category would be the brown anole lizard. What do you management goal do you think FWC should be communicating about those species? For communication purposes, should FWC messages about those species be like the messages for common native wildlife, or should FWC communicate about these low-impact nonnatives just like they talk about more invasive species?

- We have come to understand that FWC is trying to communicate an overall goal of controlling or eradicating exotic species in Florida. Some exotics, like python or lionfish, are negatively impacting many species or entire ecosystems. Other exotics, like brown anole lizard or small parrots, are competing with a few native species, perhaps in a very local area. Are the messages being communicated about those species different? Why and how? Should they be?

Messages about why problems with fish and wildlife are occurring and how they can be solved

- What specific message should FWC be communicating about why problem interactions are occurring with [recovering native species, common native species, common nonnative species, exotic species]?

- In addition to providing specific advice on actions people can take to avoid or minimize problems with wildlife, what message should FWC be communicating consistently about how society can solve problems with [recovering native species, common native species, common nonnative species, exotic species]?

Challenges of communicating about wildlife populations vs. problematic individuals

- What are the challenges FWC faces when communicating about conserving populations of endangered or recovering species (like panther or black bear) even when individual animals may come into conflict with people?

- How do you think FWC could do to communicate consistent messages about managing problematic individual animals without compromising conservation of endangered or recovering populations?

Different messages for human safety impacts

- What messages should FWC send about species that may negatively impact human safety (e.g., biting or scratching people?

- Is it difficult to communicate a conservation message about species that may harm people?

Species characterization

- Should FWC try to promote particular labels to characterize and differentiate the status of species (e.g., native, invasive, common/rare, etc.)? Why might that be helpful to Floridians and FWC?

FWC role and responsibilities

- What role and responsibilities do you think FWC should be trying to promote when it comes to managing problems associated with endangered or recovering native species like black bear?

- What role and responsibilities do you think FWC should be trying to promote when it comes to managing problems associated with common native species (like raccoons) or common nonnative species, like coyotes, that are not invasive?

- What role and responsibilities do you think FWC should be trying to promote when it comes to managing problems associated with exotic invasive species like lionfish or tegus?

APPENDIX D (BLACK BEAR CONTENT ANALYSIS TABLES)

Table B1. Bear descriptor code families in newspaper articles.

Descriptors	# of occurrences
Population size, range, movement	84
General traits, natural history	76
Bear actions (e.g. climb trees)	66
Population status (recovering, de-listed)	41
Eating, food/feeding habits	34
Positive attributes (beautiful, etc.)	24
Negative attributes	9
Total	**334**

Table B2. Bear descriptor code families related to interactions with people, in newspaper articles.

Bears are …	# of occurrences in FWC quotes
Sighted, seen	82
Attracted to human food sources	36
Not a threat to people	40
A threat to people	19
Captured, relocated, euthanized	18
(all other descriptors)	10
Total	**205**

Table B3. Bear descriptor code families in FWC quotes.

Descriptors	# of occurrences in FWC quotes
Population size, range, movement	13
Interactions with people	10
Bear feeding behavior	8
Bear's actions	7
General traits (fur, gender, etc.)	6
Positive attributes (beautiful, etc.)	6
Bear population changes	2
Bear status listing	2
Attributes	1
Total	**55**

Table B4. Descriptor details within bear descriptor code families in all newspaper articles (554 total descriptors identified).

Descriptors (items in bold are family names)	# of occurrences*
Traits	**265**
Height, weight, age of bear	24
Size is big, large, massive	8
Baby bear, description of cubs	7
Gender of the bear	5
Color of fur, pattern on fur	5
Running speed	4
Young	3
Mother with cubs, birthing cubs, protecting cubs	3
Sounds made by the bear	2
Description of breathing	2
Wild animal	2
Largest native land mammal	2
Gene pools, genetics	2
Little	1
Climbing speed	1
Sense of smell	1
Slow reproducers	1
Genus and species	1
Black hunk of a creature	1
Bear evidence (tracks)	1
Bulking up for winter	10
Bear diet- general	7
Not picky eaters, will eat anything	6
Hungry, ravenous	5
Don't like meals interrupted, had meal interrupted	2
Big eaters	1
Opportunistic omnivores	1
Foraging eagerly	1
Searching for food	1
Population size, growth rate	21
Bear range, distribution, where a particular bear came from	16
Ran away, took off, left the area	10
Historic population size	8
Wandering, ambling	8

Table B4. (continued)

Descriptors (items in bold are family names)	**# of occurrences**
Individual bear's recent movements	6
Bears sending other bears away from territory, moving to new territory	4
Wanderers	4
They know no boundaries	1
Habitat size	1
Bear passing through an area	1
Southern animals	1
Bear doesn't know where he's headed	1
Didn't stay long	1
Bears in new areas	1
Climb trees, found in a tree, fell from tree	42
Looking for a mate	4
On its hind legs	2
Napping or resting	2
Lumber	2
Bear will win a skirmish	1
Clawing	1
Paws the ground	1
Hibernation	1
Charging	1
Orphaned	1
Sleepy	1
Looking for dry land	1
Periods of activity	1
Nosing something on the ground	1
Don’t hibernate	1
Camping out	1
Sauntering	1
Active in autumn	1
Curious, curiosity	3
Following their natural instincts	1
Solitary	1
Negative attributions	**9**
Intimidating, frightening, scary	3
Lurking	1
Prowling	1
Potentially dangerous	1
Fugitive	1

Table B4. (continued)

Descriptors (items in bold are family names)	**# of occurrences**
(Negative attributions continued)	
Ill-mannered	1
Unruly	1
Positive attributions	**24**
Bear as ambassador, poster animal for conservation	4
Intelligent, clever, smart	3
Fuzzy, furry	3
In good shape, has done well	2
On the conserve wildlife license plate	1
Beautiful	1
Cuddly	1
God's creatures	1
Charismatic mammals	1
Charm of the black bear	1
Nice	1
Fascinating	1
Cool (as in interesting)	1
Colossal	1
Innocent	1
Have a sense of adventure	1
Status	**41**
Recovering/growing population	7
Protected	4
Threatened or imperiled species	4
Native	3
Umbrella or keystone species	2
Natural heritage	1
De-listed from threatened species list, once threatened	14
Sad for bears (in response to de-listing)	1
The plight of the black bear	1
Not as rare as one might think	1
Not at risk of extinction	1
Seem everywhere	1
They are here to stay	1
Interactions with people	**215**
Caught, spotted, or sighted in a location	30
Found at a residence or on property (no mention of damage)	14

Table B4. (continued)

Descriptors (items in bold are family names)	**# of occurrences**
(interactions with people continued)	
Roaming/strolling a populated area	10
Sightings are common in various areas	7
Damage to residence/property	9
Increase in sightings/encounters	6
Relocated, released, returning to wild	4
Not prevalent in an area	3
Roaming (no mention of populated area)	3
Found or seen year round	1
Sightings are rare in various areas	1
Loose on the streets	1
People trying to see a bear	1
Chances of seeing a bear	1
Eating garbage	14
Bear accessing human food	7
Eating from bird feeders	5
Attack a pet or animal	4
Eating from neighborhood trees/bushes	4
Eat pet food	2
Euthanized or killed bear	3
Radio collared and/or tagged bear	3
Hit by cars	2
Identify a problematic bear	2
Bear search by officials, bear avoiding capture	2
Bear trapped	2
Rescued	1
Bears in zoo	1
Bear in captivity	1
A fed bear is a dead bear	1
Attacks/dangerous encounters are rare	4
Not a threat, not threatening	3
Little danger to humans	2
Has not killed a human	1
Not aggressive by nature, not aggressive action	9
Bear is scared	6
Afraid	1
Skittish	1

Table B4. (continued)

Descriptors (items in bold are family names)	**# of occurrences**
(interactions with people continued)	
Shy, timid	3
Prefers to avoid people, ignored person	3
Reclusive- avoiding people	2
Prefer to run away from a situation	2
Normally bears should be uncomfortable around people	1
Spooked by human activity	1
Will not kill for the sake of killing	1
Bear presence is not a problem	1
Bear determining human as prey or threat	6
Threat to public safety or humans	2
Bold, become bold	2
People's perceptions of more and bolder bears	1
Increasingly active and aggressive	1
Surprised people	1
Pounces on a person	1
Incident with children	1
Defensive	1
Will defend themselves, will attack if threatened	1
People being cautious because bears are in the area	1
Increase in nuisance complaints	1
Trying to figure out humans, where it belongs	2
Human behavior leading to bear backing down	1
Children are attracted to bears	1
Increase in interactions with people	1
Captured attention	1
Noticed people	1
Bears becoming more real	1
Bear not cooperating	1
Stories of bears at campgrounds	1

*554 total descriptors

Table B5. Negative impacts bears have on people and the environment.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Health and safety impacts		
Threaten human safety	9	0
Attack or kill pet cats and/or dogs	3	0
Vector for disease transmission to people	1	0
Vector for transmission of diseases to pets	1	0
Economic impacts		
Damage property other than crops	10	0
Prey on livestock	5	0
Damage vegetables/gardens	2	0
Psychological impacts		
Negative psychological effect (unspecified)	2	0
Get into garbage	1	4
Total	**34**	**4**

Table B6. Positive impacts bears have on people and the environment.

Positive impact	# of occurrences	# of occurrences in FWC quotes
Because children like bears, they are a great subject for environmental/ecological education	3	0
Bear license plate revenues fund wildlife conservation programs	2	0
Protected status of bears provides habitat protection for other species	1	0
Some people find that seeing bears is exciting, fun (psychological)	1	0
Total	**7**	**0**

Table B7. Positive impacts on bears.

Positive impact	# of occurrences	# of occurrences in FWC quotes
Population restoration has been successful	8	0
Restoration has improved genetic diversity/gene pool	1	0
Total	**9**	**0**

Table B8. Negative impacts on bears.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Problem bears are killed or euthanized	15	0
Bear habitat is being fragmented, reduced, destroyed	11	2
Bears crossing roads are killed in collisions with vehicles (or have to be euthanized because of injuries)	11	4
Illegal take/killing/poaching of bears	9	10
Delisting will have a negative impact on recovery	4	0
A fed bear is a dead bear or other negative impact	3	1
Problem bears are tranquilized	2	0
Bears killed (general)	1	0
Bear hunting (opposition to it)	1	0
Loss of genetic diversity of population in FL	1	0
Total	**58**	**17**

Table B9. Bear problem-prevention actions.

Problem-prevention actions	# of occurrences	# of occurrences in FWC quotes
Guidance, what to do if you confront a bear	20	7
Remove/prevent access to other food attractants	15	5
Secure/prevent access to garbage	11	5
Guidance, recreating in bear country	10	3
Encourage community to institute ordinances/practices preventing access to food attractants	6	0
Don't feed bears	3	0
Guidance, how to prevent bear-pet confrontations	2	0
Report urban bear sightings to FWC	2	0
Reinforce natural fear of humans (hazing, "scare the bear")	2	0
Install fencing around attractants (gardens, compost, etc.)	2	1
Contact FWC for more information on problem prevention methods	1	2
Total	**74**	**23**

Table B10. Text in newspaper articles interpreted as a frame for why Floridians are experiencing problem interactions with black bears (i.e., problem frames).

Problem frame	# of occurrences	# of occurrences in FWC quotes
Negative interactions are a result of food conditioning and habituation		
Food in urban areas is easily accessible	1	6
Unsecured garbage attracts bears and creates human-bear conflicts	1	0
People don't understand that they are creating the food attraction that leads to the problems they are experiencing	1	4
Associating people with food	1	0
"A fed bear is a dead bear"	1	1
Bears come into conflict with people because they are attracted to human foods when trying to fatten up for winter	1	0
Negative interactions are a result of human and bear population increases		
There are too many people in Florida	1	0
Human expansion into bear habitat has led to increased human-bear interactions		
Bear habitat loss and fragmentation	8	0
People live in bear habitat	2	0
Other		
Not adapted to people	1	0
Increase in calls to FWC	0	1
Few options to place bears in captivity	1	0
Total	**19**	**12**

Table B11. Text in newspaper articles interpreted as a frame for what Floridians can do to address problem interactions with black bears (i.e., solution frames).

Solutions	# of occurrences	# of occurrences in FWC quotes
Relocate urban/suburban bears	16	4
Implement a bear management plan and research	7	2
Euthanize extremely bold bears (those deemed a high risk to people) or those injured in vehicle collisions	5	9
Collective community actions to reduce human-bear conflicts	5	0
Educate people/provide information so they learn to prevent human-bear conflicts in their communities	4	0
Leave bears alone	4	0
Supervised bear encounters (police, FWC, etc. on site)	4	4
Citizen science (community tracking bear sightings)	4	0
Delisting	3	0
Legal charges for baiting/possessing/hunting bear	2	0
Relocate bears to sanctuaries/zoos	2	0
Prevent food attraction and food conditioning	1	0
Multi-faceted response	1	0
People just need to realize that living in close proximity to bears is a human safety threat	1	0
Just take pleasure in knowing bear population is recovering	1	0
Road signs/bear crossings	1	0
Legal hunting for population management	1	0
Research on bears	0	2
Total	**62**	**21**

Table B12. Titles of 2011-2013 bear-related newspaper articles included in analysis.

- 620-pound black bear biggest found alive in state
- A heads-up about the hungry bears
- As winter nears, bears roam more -- including near schools
- Authorities Nab Black Bear Roaming in Southwest Florida
- Bear climbs a tree near Gator's Dockside
- Bear draws crowd in downtown New Smyrna, crawls down from tree after sunset
- Bear gets new forest home
- Bear sightings up in Springfield
- BEARS ARE OFF ENDANGERED LIST
- Bears in Volusia chowing down now for winter
- Black bear attack raises questions
- Black bear killed on Tyndall Air Force Base
- Black bear numbers have recovered since 1970s.
- BLACK BEAR ON LOOSE, STEALS BIRTHDAY CAKE
- Black bear seen at school - UMATILLA
- Black bear spotted near FGCU campus
- Black bear vacated tree in Ocala after two days
- BRIEF: Bear conservation plan to be discussed
- Errant bear finds no respite in Tampa
- Excitement about bear sighting turns to dread
- Florida black bear spotted near car dealership
- Florida Black Bear still in dire straights
- Florida man gets 30 days in jail for killing black bear
- FWC decisions hard to figure or predict
- FWC investigates dead black bear dumped in Estates
- FWC removes bear from threatened list
- GHOSTS OF THE WOODS
- Hurlburt recognized by state for bear efforts
- KEEP BEARS ON THE LIST
- Killing bears that didn't attack -- a case of overkill?
- Lake Helen bear scare quiets down for now
- Letter: How sad for bears
- Man accused of luring, killing bear pleads not guilty
- Man Charged With Killing Black Bear With a Broadhead Arrow
- Massive bear relocated
- Not your typical bear market
- Orphaned black bear released back into wild
- Panel removes Florida black bear from state's threatened species list
- Police Report Car Damaged by Large Dog or Bear in Lake Wales
- Q&A: What to do in face-off with a bear?
- RAMBLING BEAR NOSES INTO TAMPA

Table B12. (continued)

- Researchers go scouting the cubs Black bear facts collected from first pair to be born in woods of Camp Blanding
- School officials encounter black bear on campus
- Seen a panther or black bear?
- State officials want help counting bear population
- Students asked to create bear-awareness videos
- VIDEO: Bear caught napping on lanai in North Naples
- WELCOME TO BEARLANDO
- Why did the FWC euthanize the bear hanging out at North Naples beach?
- Wild news
- Winter Park museum is attraction for lost bear

Table B13. Names of newspapers in which bear-related articles appeared.

Newspaper	# of articles
Orlando Sentinel	12
Ocala Star-Banner	5
Naples Daily News	4
Daytona Beach News	3
Ledger	3
News Herald	3
Daily Commercial	3
The Tampa Tribune	2
Tampa Bay Times	2
Sun Sentinel	2
St. Petersburg Times	2
Florida Times-Union	2
Key West Citizen	1
Citrus County Chronicle	1
Palm Beach Post	1
Marco Island Eagle	1
Northwest Florida Daily News	1
Bonita Daily News	1
Highlands Today	1
Total	**50**

Table B14. Years in which samples bear-related newspaper articles were published.

Year	# of articles
2011	17
2012	18
2013	15

Table B15. FWC sources mentioned in bear-related newspaper articles.

FWC Name mentioned	# of occurrences
FWC General	17
Joy Hill	13
Mike Orlando	5
Gary Morse	3
Susan Carroll-Douglas	3
Brian Scheick	2
Carli Segelson	2
Elsa Haubold	1
Corey Wigginton	1
Dave Telesco	1
Gabriella Ferraro	1
Kip Frohlich	1
Nick Wiley	1
Rodney Barreto	1
Stan Kirkland	1
Stewart Spoede	1
Walter McCown	1
Total	**55**

Table B16. FWC bear documents analyzed, by document category.

Document type	# of occurrences
Problem prevention tools, techniques	13
Problem prevention flyers	4
Bear management plan	2
FWC webpage	2
FWC white papers/fact documents	2
FWC Policy statements	1
General education	1
Internal, staff training or guidance	1
Map	1
Presentation for general audiences	1
Florida rule, statute, law	1
Total	**29**

Table B17. Sources of FWC bear documents.

Document source	# of documents
FWC	22
FWC and others	1
Other NonFWC	1
Product manufacturer	3
University of Florida IFAS	2

Table B18. Bear descriptor code families in FWC documents.

Descriptors	# of occurrences
General traits, natural history	31
Population size and species status (recovering, de-listed)	20
Eating, food/feeding habits	14
Bears are NOT a threat	13
Bear actions (e.g. climb trees)	1
Total	**79**

Table B19. Negative impacts bears have on people or the environment mentioned in FWC materials.

Negative impact	# of occurrences
Threaten human safety	5
Negative psychological effect	4
Damage property other than crops	3
Prey on livestock	1
Damage crops	1
Attack pets	1
Raiding garbage cans	1
Total	**16**

Table B20. Negative impacts people have on bears.

Negative impact	# of occurrences
Problem bears are killed or euthanized	1
Bear habitat is being fragmented, reduced, destroyed	3
Bears crossing roads are killed in collisions with vehicles (or have to be euthanized because of injuries)	2
Total	**6**

Table B21. FWC document statements related to positive impacts bears (or bear conservation or bear problem prevention actions) have on people.

Positive impact	# of occurrences
Protected status protects habitat for many species	2
Living in harmony with bears benefits a person (a person can enjoy having bears around, they will have less problems with any food-attracted wildlife)	2
Population restoration has been successful	1
Economic benefits associated with outdoor activities	1
Bear license plate revenues fund conservation	1
Total	**7**

Table B22. FWC document statements related to bear problem prevention actions.

Problem prevention actions	# of occurrences
Remove/prevent access to other food attractants	33
Prevent access to garbage	26
Fence around attractants	16
Hazing	14
What to do in a bear encounter/attack	13
Guidance, composting correctly	6
Report urban bear sightings to FWC	4
Contact FWC for more info on problem prevention methods	3
Guidance, response to treed bear in neighborhood	2
Encourage your community to institute ordinances/practices preventing food attraction	2
Guidance, camping problem prevention	2
Keep apiaries on platforms	2
Call FWC nuisance bear hotline	2
Guidance, preventing apiary damage	1
Never approach a bear	1
Educate your friends and neighbors about problem prevention	
Protect pets (keep them inside or on a leash)	1
Hazing, "scare the bear" (reinforce natural fear)	1
Total	**130**

Table B23. Problem framing statements in FWC bear documents.

	# of occurrences
Negative interactions are a result of food conditioning and habituation	
Habituation and food conditioning leads to H-B conflicts	13
A fed bear is a dead bear	3
Once food conditioned, deterring a bear from food source is very difficult	2
Problems are a result of garbage availability to bears	2
Bears that lose their fear of humans become nuisance/problem bears	2
Bears come into conflict with people because they are attracted to human foods	1
Negative interactions are a result of human and bear population increases	
As the number of humans and bears increase, interactions increase	2
Some human-bear conflict is inevitable, because people live close to bears and interaction will occur	3
Human behavior [unspecified] is the root of problem interactions with bears	3
Human expansion into bear habitat has led to increased human-bear interactions	1
Total	**32**

Table B24. Statements in FWC bear documents suggesting solutions to negative human bear interactions.

Statement	# of occurrences
Prevent food attraction and food conditioning	13
Remove the source of bear attraction before problems arise	3
If you care, don't feed the bear	2
It is illegal to feed bears	1
Keep bears wild	2
Collective community actions to reduce human-bear conflicts	3
Educate people so they learn to prevent conflicts in their community	1
Bear relocation generally not possible (is NOT a solution)	3
Total	**28**

Table B25. FWC press releases on black bear topics, 2011 - 2013.

Release title	Release date
Information on problem prevention (e.g., "Be bear aware" information)	
FWC to Gainesville residents: Be 'bear aware'	5/22/2011
FWC to Gainesville residents: Be ‘bear aware’	6/1/2011
Bears’ appetites soar in fall, so stash your garbage	9/1/2011
FWC to Baker County residents: Be ‘bear aware’	10/4/2011
High school students invited to create bear-awareness video for FWC contest	10/6/2011
Student videos teach Floridians to be ‘bear smart’	12/16/2011
FWC to Florida residents: Be ‘bear aware’	5/23/2012
‘Bear’ with us, store your garbage	11/20/2012
Black bears very active during fall	11/30/2012
Avoid human-bear conflicts with some simple steps	5/3/2013
As bears bulk up in fall, FWC asks public to share bear sightings, stash trash	10/4/2013
Securing trash can reduce bear activity in Lake Wales Ridge	11/5/2013
Announcements related to developing a bear management plan	
FWC shares black bear conservation success, solicits feedback on new bear management plan	11/10/2011
FWC sets Nov. 22 workshop to discuss black bear conservation in Panhandle	11/16/2011
Nov. 29 workshop to discuss black bear conservation in South Florida	11/23/2011
FWC public workshop Dec. 6 will discuss black bear conservation	12/2/2011
FWC moves forward on plan to manage, conserve Florida black bears	2/9/2012
Florida black bear draft management plan revised, ready for public input	4/13/2012
(REVISED) FWC approves black bear plan to conserve Florida’s largest land mammal	6/27/2012
FWC to hold 3 public meetings for input on managing bears in northwest Florida	10/8/2013
Announcements to publicize a bear festival	
Florida Black Bear Festival is Saturday	3/21/2010
Learn about bears, have family fun at Forgotten Coast Black Bear Festival	10/10/2011
Florida Black Bear Festival is free, family fun	3/15/2012

Table B25. (continued)

Release title	Release date
Announcements to publicize "be bear aware" presentations	
Collier residents invited to public meeting to learn about living with wildlife	9/26/2011
Example of a successful Bear Smart community (approach to reducing problems)	
Hurlburt Field to be recognized for aggressive efforts to reduce bear complaints	11/7/2011
FWC statement on why a bear was euthanized	
Macclenny cake-stealing bear euthanized	10/20/2011
FWC euthanizes female bear in Okaloosa County, reminds people to stow garbage, not feed cubs	12/4/2012
FWC request for tips to identify a bear poacher	
Reward increased in Crestview bear shooting	2/16/2011
FWC seeks information in black bear death	7/29/2011
Information on a bear dispersing through a residential or urban area	
Bear searching for home gets lost in Orlando	5/8/2012
Bear moving west through Bonita Springs	5/31/2013
Information on a bear that attacked resident	
FWC identifies bear that injured Longwood woman	12/17/2013
Publicizing that FL bear management is a success story	
Florida black bear…a conservation success story	9/29/2011
Information about bear den visit / bear research project	
Camp Blanding bear cubs examined by FWC biologists	3/27/2012
Other (miscellaneous incidents)	
Leaving bear with burned paws alone is best for the bear	1/19/2012

Table B26. FWC press releases on black bear topics (2011 – 2013) that contained problem prevention messages, problem framing statements, or solution statements.

Release title	Problem prevention messages [1]	Problem frames	Solution frames
2010 releases			
Florida Black Bear Festival is Saturday	Y	N	Y
2011 releases			
Reward increased in Crestview bear shooting	N	N	N
FWC to Gainesville residents: Be 'bear aware'	Y	Y	Y
FWC to Gainesville residents: Be ‘bear aware’	Y	Y	Y
FWC seeks information in black bear death	Y	Y	N
Bears’ appetites soar in fall, so stash your garbage	Y	Y	Y
Collier residents invited to public meeting to learn about living with wildlife	Y	N	N
Florida black bear…a conservation success story	Y	N	N
FWC to Baker County residents: Be ‘bear aware’	Y	Y	Y
High school students invited to create bear-awareness video for FWC contest	N	N	N
Learn about bears, have family fun at Forgotten Coast Black Bear Festival	Y	N	N
Macclenny cake-stealing bear euthanized	Y	Y	Y
Hurlburt Field to be recognized for aggressive efforts to reduce bear complaints	N	Y	Y
FWC shares black bear conservation success, solicits feedback on new bear management plan	Y	Y	Y
FWC sets Nov. 22 workshop to discuss black bear conservation in Panhandle	Y	N	N
Nov. 29 workshop to discuss black bear conservation in South Florida	Y	N	N
FWC public workshop Dec. 6 will discuss black bear conservation	Y	N	N
Student videos teach Floridians to be ‘bear smart’	Y	N	N

[1] Y = Yes, N = No

Table B26. (continued)

Release title	Problem prevention messages[1]	Problem frames	Solution frames
2012 releases			
Leaving bear with burned paws alone is best for the bear	N	N	N
FWC moves forward on plan to manage, conserve Florida black bears	Y	N	N
Florida Black Bear Festival is free, family fun	Y	N	Y
Camp Blanding bear cubs examined by FWC biologists	N	N	N
Florida black bear draft management plan revised, ready for public input	N	N	N
Bear searching for home gets lost in Orlando	N	N	N
FWC to Florida residents: Be 'bear aware'	Y	Y	Y
REVISED: FWC approves black bear plan to conserve Florida's largest land mammal	Y	N	N
'Bear' with us, store your garbage	Y	Y	Y
Black bears very active during fall	Y	Y	Y
FWC euthanizes female bear in Okaloosa County, reminds people to stow garbage, not feed cubs	Y	Y	Y
2013 releases			
Avoid human-bear conflicts with some simple steps	Y	Y	N
Bear moving west through Bonita Springs	Y	Y	N
As bears bulk up in fall, FWC asks public to share bear sightings, stash trash	Y	Y	Y
FWC to hold 3 public meetings for input on managing bears in northwest Florida	N	N	N
Securing trash can reduce bear activity in Lake Wales Ridge	Y	Y	Y
FWC identifies bear that injured Longwood woman	N	N	N

[1] Y = Yes, N = No

APPENDIX E (COYOTE CONTENT ANALYSIS TABLES)

Table C1. Coyote descriptor code families in newspaper articles.

Descriptors	# of occurrences
General traits, natural history	359
Population status and distribution	82
Eating habits (i.e., predators, omnivores, scavengers)	65
Negative attributes	65
Positive attributes (beautiful, etc.)	16
Total	**587**

Table C2. Coyote descriptor code families related to interactions with people, in newspaper articles.

Coyotes …	# of occurrences
Attack, threaten, kill pet cats and dogs	68
Threaten livestock	40
Howl, vocalize, yip	38
Are being seen more frequently	17
Are attracted to human-altered habitats (e.g., pasture, suburbs)	5
Can spread disease to people	4
Damage melons	3
Rummage through trash	3
Cohabit with people easily	2
Like to forage in residential areas	1
Spread disease to dogs	1
Total	**182**

Table C3. Descriptor details within coyote descriptor code families, in all newspaper articles.

Descriptors (items in bold are family names)	# of occurrences*	# of occurrences in FWC quotes**
Traits	**359**	**48**
Timid, shy, skittish, avoid people	56	5
Does not travel in packs of more than 2	5	3
Pose little threat to people	2	0
Adaptable: live anywhere, eat anything	34	7
Intelligent	15	2
Opportunistic	12	3
Survivors	4	1
Curious	1	0
Resourceful: they find food	1	0
Bold, not afraid of people	30	1
Aggressive	11	0
Fighting	1	0
Pose a growing threat to people	1	0
Dangerous if cornered	1	0
Wild, wild canids	14	0
Run in packs, work as a team	12	0
Prowl, prowling	5	0
Are territorial	5	0
Wolf-like	4	0
Hungry	1	0
Dog-like (e.g., compared to German Shepard	17	1
Size or weight of coyotes	16	1
Described coyote color, other features	9	1
Agile	5	0
“creatures” or “critters”	4	1
Furry	4	0
Prefer open land	1	0
Breeding activity or traits described	13	3
Litter size	13	0
Quickly re-occupy territory if a coyote/group removed	7	7
Reproduce rapidly	4	0
Live 4-6 years	1	1
Populations fluctuate	1	0

Table C3. (continued)

Descriptors (items in bold are family names)	# of occurrences	# of occurrences in FWC quotes
(traits continued)		
Population will stabilize without human food	1	0
Most active at dawn, dusk	9	2
Tend to be nocturnal	5	0
Active during the day out west	1	0
Fast, faster than dogs	7	0
Not dogs	1	0
Cartoon character reference	7	0
Elusive	6	0
Are difficult to trap	5	0
Roaming	5	0
Pace erratically	1	0
"critical sightings"	1	0
Healthy-looking	1	0
Eating habits	**65**	
Ambush predators	1	0
Predators, hunters, stalk prey, "killers"	27	2
Omnivorous	34	7
Scavengers	3	0
Negative attributions	**65**	**0**
Nuisance	28	0
Are a problem, are troublesome	16	0
Lurking, skulking, slinking	5	0
Tricky, crafty, shrewd	4	0
Look intimidating, frightening	3	0
Alarming, threatening	2	0
Renegade invaders	2	0
Toothy	2	0
Vicious	1	0
Running amok	1	0
Has become a neighbor to fear	1	0
Positive attributions	**16**	**1**
Are a symbol of the desert southwest	4	0

Table C3. (continued)

Descriptors (items in bold are family names)	# of occurrences	# of occurrences in FWC quotes
(positive attributions continued)		
America's native songdog	2	0
Beautiful	1	0
Cute (pups are)	1	0
Play	1	0
Wandering minstrels	1	0
Magnificent	1	0
Cajouling	1	0
Are not a problem	2	1
Do not threaten cows	2	0
Population status and distribution	**82**	**20**
Widely distributed in FL	34	6
Are here to stay	14	5
Are increasing in number, in US or FL	8	1
Colonized FL on their own; expanded range	7	2
Nonnative	5	3
Invasive species (introduced by man)	4	0
Are a common species	3	0
Unprotected status	2	1
Naturalized	2	1
Historically uncommon	1	0
Newcomer	1	0
Native	1	1
Interactions with people	**182**	**17**
Attack or threaten pets	60	10
Eat small dogs and cats	8	2
Spread disease to dogs	1	0
Howling, vocalizing, yipping	38	0
Are being seen more frequently, especially in urban areas	14	2
Are sighted crossing roads	3	0
Threaten or attack cows	23	0
Kill livestock (calves, lambs, chickens)	17	2
Damage watermelons	3	1
Are attracted to human altered landscapes	5	
Rummage through trash	3	0
Cohabit easily with humans	2	0
Forage in residential areas	1	0

Table C3. (continued)

Descriptors (items in bold are family names)	# of occurrences	# of occurrences in FWC quotes
(interactions with people continued)		
Can spread disease to people	4	0
Interactions with wildlife	**15**	**9**
Moved to FL when red wolves were killed	6	3
Raid bird or turtle nests	3	2
Kill deer fawns and wild turkey poults	3	0
Run deer	1	0
Control rodents	1	2
Reduce feral cat population	1	2

*784 total descriptors
**95 descriptors in FWC quotes

Table C4. Negative impacts coyotes have on people and the environment.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Health and safety impacts		
Attack or kill pet cats and/or dogs	84	10
Threaten human safety	20	5
Vector for disease transmission to people	3	0
Vector for transmission of diseases to pets	1	0
Economic impacts		
Prey on livestock	17	2
Damage melon crops (watermelon, cantaloupe)	4	1
Livestock loss has economic impact on farmers	3	0
Will reduce property values in neighborhoods	1	0
Damage property other than crops	1	0
Ecological impacts		
Threaten native wildlife	6	2
Psychological impacts		
Get into garbage	1	0
Damage vegetables	1	0
Psychological impact of pet attacks	0	1
Total	**142**	**21**

Table C5. Positive impacts coyotes have on people and the environment.

Positive impact	# of occurrences	# of occurrences in FWC quotes
Control small carnivores, benefitting some threatened wildlife	5	4
Provide rodent control	4	2
Control feral cat population	2	2
Scavenging cleans up the environment	1	0
Reduce crop-eating wildlife	1	1
Help ecosystem by eating insects	1	1
Fill ecological role of red wolves	1	1
Draw for ecotourists	0	1
Total	**15**	**12**

Table C6. Negative impacts on coyotes.

Negative impact	# of occurrences
Hit by vehicles	3
Reduction of habitat	1
Total	**4**

Table C7. Coyote problem prevention code families.

Problem prevention actions	# of occurrences	# of occurrences in FWC quotes
Take action to reduce pet risk	**62**	**29**
Keep pets indoors	13	
Keep pets on leash and close	18	
Don't leave pets unattended	11	
Do not walk pets or allow pets outdoors at dawn or dusk	11	
Don't walk dogs in areas with ambush cover	4	
Lift small pet off ground if coyote seen	2	
Carry a flashlight at night	2	
"Responsible pet ownership"	1	
Instill coyote fear response	**48**	**18**
Hazing actions (all types)	48	
Remove food attractants	**44**	**15**
Remove all food sources/do not feed coyotes	15	
Don’t leave pet food outdoors; feed pets indoors	13	
Reduce/prevent access to garbage	12	
Feed pets indoors	2	
Make bird feeders/feed less accessible to coyotes	2	
Information/education/technical assistance	**23**	**2**
Call FWC or go to FWC website for info/help	9	
Report coyote sightings/incidents to FWC	5	
Call police	2	
Attend FWC presentation	2	
Report coyote sightings/incidents to Wildlife Services	1	
Watch video produced by a county	1	
Provide people with technical assistance	1	
Problem prevention information onsite in places where people walk dogs	1	
Provide information to communities	1	
Change the habitat	**15**	**7**
Remove brush around your house	6	
Build fence around your yard	4	
Install backyard lighting	2	
Remove access to water sources	1	
Put in an escape post in your yard for your cat	1	
Remove denning areas near your house	1	
Take action to reduce risk to children	**4**	**0**
Never leave children unattended	2	
Have children stay in groups	1	
Teach children not to run, but slowly move inside or higher	1	
Totals	**196**	**71**

Table C8. Text in newspaper articles interpreted as a frame for why Floridians are experiencing problem interactions with coyotes (i.e., problem frames).

Problem frame	# of occurrences	# of occurrences in FWC quotes
Coyotes attracted to residential areas due to food availability	15	1
Coyotes can become food conditioned, which leads to problem interactions	14	5
Trying to eliminate coyote populations is expensive and futile	13	10
Lethal control is difficult in urban areas	11	3
Coyotes no longer have natural predators like wolves, panthers	6	0
Development causes more human-coyote encounters	6	2
Coyotes have become bolder	5	0
Coyotes habituate to people	4	1
Coyotes are not going away	4	2
People live in good coyote habitat	4	0
Police and FWC say they cannot do anything to help	3	7
Untended properties create ambush cover	3	0
People are feeding coyotes	3	0
People don’t adequately protect their pets	3	0
Coyotes blamed for things they did not do	2	0
Human population increase leads to more human-coyote interactions	1	2
Problems are caused by coy-dogs or sick coyotes	1	0
Ordinances that don’t allow homeowners to install high fences	1	0
Coyotes cause problems when they are feeding pups	1	0
Coyotes are relatively new; people not used to having them around	1	1
Coyotes drawn to suburbia because their habitat was breached	1	0
Compensatory reproduction response to coyote control	0	7
Coyotes have become more numerous	0	6
Totals	**102**	**47**

Table C9. Text in newspaper articles interpreted as a frame for what Floridians can do to address problem interactions with coyotes (i.e., solution frames).

Solutions	# of occurrences	# of occurrences in FWC quotes
Trap coyotes	35	12
Learn to live with coyotes (coexist)	21	7
Hunt coyotes or shoot	15	5
Raise awareness (especially through signs in the neighborhoods)	13	1
Hazing coyotes	8	4
Eliminate problem coyotes	7	0
Be prepared to encounter coyotes when walking pets	5	0
Relocate coyotes	5	0
Educate homeowners about behavior to reduce problem interactions	5	2
Study coyote movements	5	1
Try to eradicate coyotes	2	0
Remove food attractants	2	1
Responsible pet ownership	2	2
Create a coyote management plan	2	3
Create a task force to address coyote issues	2	2
Clear overgrown lots	1	0
Don’t walk pets at night	1	0
Sterilize coyotes	1	0
Homeowners take responsibility	1	1
Fence coyotes out of yards	1	0
Keep pets indoors	1	0
Reduce coyote population	0	1
Total	**135**	**42**

Table C10. Titles of 2011-2013 coyote-related newspaper articles included in analysis.

- 5/24 FLORIDA BRIEFS
- Area's coyotes are heard more than seen
- Beverly J. Fleming: Cow pastures attract coyotes because of food supply
- Bradenton woman forms group to target coyotes
- CALL OF THE WILD IN THE BURBS
- Cat killed in Moorings neighborhood; owners suspect coyote
- Cats Raise Ruckus When Coyote Visits
- COEXISTING WITH OUR WILD NEIGHBORS
- Coyote - blamed for killing cat - in E. Naples
- Coyote awareness signs placed in Manatee County - One in neighborhood where dog was killed two years ago
- Coyote chorus likely here to stay
- Coyote encounters getting attention from state agency
- Coyote history
- Coyote predation checklist
- COYOTE PUPS FOUND AT HOTEL
- Coyote sightings on the rise in Florida
- Coyote warnings for Marco residents, visitors
- Coyotes a plague for farmers
- Coyotes and their local impact
- Coyotes are just a part of Citrus life
- Coyotes creeping into some Treasure Coast neighborhoods
- Coyotes here to stay
- Coyotes lope into Tamarac - Alarmed residents cite fatal attacks on pets
- Coyotes may have claimed another pet in urban Manatee
- Coyotes on the prowl
- Coyotes prompt resident to take action
- Coyotes pushing boundaries
- Coyotes run wild
- Coyotes suspected in Bradenton pet's mauling
- Coyotes suspected in pet deaths;
- Coyotes: here to stay
- Danger of coyotes concerns Manatee residents
- Dog mauled, dies; Naples neighborhood fears coyote attack
- Fate of coyotes at airport in city’s hands
- Florida's coyotes: Learn to live with them
- IS 'THE JUNGLE' A COYOTE HAVEN?
- Keystone, Odessa communities report loss of pets, livestock
- Learn to live with coyotes, expert says
- Letter: Protect our pets from predators
- Manatee County offers tips on how to deal with coyotes

Table C10. (continued)

- Manatee woman develops sign to warn against coyotes - More education needed, coyote activist says
- Neighbors struggle to stop pet-stalking coyotes
- Ocala resident: Coyotes attack just feet from front door, snatching small dog
- Odessa-area residents have lost sheep, dogs, cats
- Pack of coyotes living in Spring Hill neighborhood
- Property owners worry about attacks;
- Q&A: How to cope with Orlando area's wily coyotes
- Residents on alert after coyote kills Chihuahua in southwest Orange
- Residents set to fight back against coyotes;
- Rotonda West to consider coyote trapper
- Sanctuary caring for rescued coyote pups
- SIGHTINGS REMIND US THAT WILDLIFE IS STILL PRESENT
- State agency research targets coyotes
- There have been reports of sheep, dogs and cats killed
- TIME TO TREAT COYOTES LIKE INVASIVE PYTHONS?
- TOUGH TALK ABOUT COYOTES
- TRYING TO CLEAR UP A PROBLEM - PARKLAND HOPES CLEANING UP OVERGROWN LOTS WILL HELP WITH COYOTE PROBLEM
- We need to learn to live with coyotes
- Where the wild things are
- Wherever you turn, coyotes nearby Hunting them gains popularity; late winter, early spring best time
- Wild animal attacks
- Wildlife officials to tackle coyote problem
- Wile E. lives next door
- Wily coyotes and your dog
- With Manatee coyote sightings still steady, be sure to stay safe

Table C11. Names of newspapers in which coyote-related articles appeared.

Newspaper	# of articles
Bradenton Herald	10
The Tampa Tribune	8
Citrus County Chronicle	8
Charlotte Sun	7
Tampa Bay Times	4
Naples Daily News	4
Orlando Sentinel	3
St. Petersburg Times	3
Sun Sentinel	2
Sarasota Herald Tribune	2
Englewood Sun	2
Marco Island Eagle	2
Hernando Today	2
Gainesville Sun	1
Daytona Beach News	1
Ledger	1
Florida Times-Union	1
Stuart News	1
St. Augustine Record	1
Total	**63**

Table C12. Years in which coyote-related newspaper articles in the analysis were published.

Year	# of articles
2011	31
2012	16
2013	16

Table C13. FWC sources mentioned in coyote-related newspaper articles.

FWC Name mentioned	# of occurrences
FWC General	30
Angeline Scotten	7
Gary Morse	6
Gretchen Hochnedel	5
Joy Hill	4
Karen Parker	3
Breanne Strepina	2
Chris Wynn	2
Tiffany Snow	2
Jayson Horadam	1
Gretchen Caudill	1
Stan Kirkland	1
Terry Doonan	1
Denis Grealish	1
Mike Frantz	1
Gabriella Ferraro	1
Total	**68**

Table C14. FWC coyote documents analyzed, by document category.

Document type	# of occurrences
Public brochure/flyer	7
Coyote factsheet	6
Florida rule, statute, law	3
FAQ document	2
Presentation for general audiences	2
Information from research reports/papers	2
Internal, staff training or guidance	1
Coyote stomach contents	1
Map	1
FWC white paper	1
FWC webpage	1
Total	**27**

Table C15. Sources of FWC coyote documents

Document source	# of documents
FWC	6
Other NonFWC	5
University of Florida IFAS	4
FWC and others	3
State of Florida	3
CA Department of Fish and Game	2
CO Division of Wildlife	2
USDA Wildlife Services	2

Table C16. Coyote descriptor code families in FWC documents

Descriptors	# of occurrences
General traits, natural history	78
Population size and species status (e.g. naturalized, here to stay)	57
Positive attributions (e.g. adaptable, intelligent)	29
Eating, food/feeding habits	15
Coyotes can be a threat to people/pets	10
Total	**189**

Table C17. Negative impacts coyotes have on people or the environment mentioned in FWC materials

Negative impact	# of occurrences
Threaten human safety	15
Attack pets	13
Threaten native wildlife	12
Prey on livestock	10
Damage crops	3
Damage property other than crops	1
Raiding garbage cans	1
Negative psychological effect	1
Total	**56**

Table C18. FWC document statements related to positive impacts coyotes have on people and the environment.

Positive impact	# of occurrences
Control small carnivores and benefit threatened wildlife	6
Control feral cats	5
Fill the ecological role of red wolves	3
Provide rodent control (no mention of threatened wildlife)	2
Hearing/seeing coyotes is valued as an aesthetic benefit to some	2
Reduce crop-eating pests	1
Total	**19**

Table C19. FWC document statements related to coyote problem prevention actions.

Problem prevention actions	# of occurrences
Secure pets	32
Remove/prevent access to food attractants	22
Hazing	16
Secure livestock	13
Secure home (e.g. install fencing, lighting)	9
Protect children	9
Report sightings	4
Contact agencies (FWC, USDA, etc.) for more information	4
Don't initiate a close encounter	4
Total	**113**

Table C20. Problem-framing statements in FWC coyote documents.

	# of occurrences
Negative interactions are a result of food conditioning and habituation	
Habituation and food conditioning leads to conflicts with coyotes	16
Coyotes are attracted to areas where food is available	1
Humans are feeding coyotes	1
Eliminating coyotes does not work	
Coyote population control is expensive and futile	9
Coyotes increase liter size in areas where some have been removed	6
Human perception of safety risks	
Perceived human safety risks are higher than they actually are	3
Perception that coyotes do more harm than they actually do	1
Coyotes have no natural predators	5
Habitat changes and increases in coyote populations have led to negative interactions with humans	3
Total	**45**

Table C21. Statements in FWC coyote documents suggesting solutions to negative human coyote interactions.

Statement	# of occurrences
Trap or eliminate problem coyotes	21
Hazing	12
Educate homeowners so they learn to prevent conflicts in their community	7
Hunt or shoot coyotes	6
Learn to live with coyotes	5
Protect livestock	5
Remove food attractants	3
Use a combination of lethal and non-lethal control methods	3
Responsible pet ownership	2
Study coyotes and their interactions with people	1
Construct fencing	1
There are fines for feeding wildlife	1
Humans should take responsibility for their own actions	1
Total	**66**

APPENDIX F (BAT CONTENT ANALYSIS TABLES)

Table BT1. Bat descriptor code families in all newspaper articles.

Descriptors	# of occurrences	# of occurrences in FWC quotes
Bat's actions	99	0
General descriptors (mammal, animal, etc.)	76	0
Bat eating/feeding habits	60	0
Bat biology	41	0
Positive attributes (important, cute, etc.)	33	0
Negative attributes (creepy, scary, etc.)	30	0
Descriptive traits (tiny, furry, etc.)	28	0
Other bat traits (misunderstood, shy, etc.)	18	1
Population size, distribution	12	0
Total	**399**	**1**

Table BT2. Descriptor details within bat descriptor code families, in all newspaper articles.

Descriptors (items in bold are family names)	# of occurrences
Bat's actions	**99**
flying	20
flying in the daytime	6
night-flying	4
roosting	13
congregate in significant numbers in man-made structures and under bridges	12
Live in a bat house	4
generally take up residency in early spring	1
taking up residence	1
play	5
crawl	4
playing with toys	3
interact with toys in their enclosures	1
like to paint	1
swarm	4
move quickly and erratically	1

Table BT2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(bat's actions continued)	
moving around to keep cool in the heat	1
are able to execute a variety of maneuvers	3
circle	1
swoop	1
coming out of an opening	1
come out at dusk	2
denizens of the night	1
emerge around sunset	2
head out	1
will pour out	1
can come in different ways	1
creating a stinking mess	1
bats fighting	1
spinning his wheels at the latrine	1
wake up groggy	1
General descriptors	**76**
mammal	19
creatures	5
animals	6
critters	4
beasts	1
free-tail	6
fruit	2
rarest	1
native	5
wild	3
voracious	3
nocturnal	8
communal	1
loud	1
silently	1
squeaky	1

Table BT2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(general descriptors continued)	
terrified	1
avoid human contact	1
very aware of the visitors	1
healing abilities	1
the creatures' droppings, known as guano, pile up under the bridge	1
attracted to dark, cool locations	2
a swarm of bats	1
cramped, warm and cozy	1
Bat eating/feeding habits	**60**
bats are believed to eat at least 3,300 pounds of insects each night	35
insectivores	4
keep the mosquitoes under control	1
when bats identify prey, they employ their wings, the wing membrane surrounding their tails, and their mouths to catch insects	1
feed on fruits and vegetables	7
suck out all the juice	1
ignore the fruit	1
feed on blood	1
predators	1
carnivores	1
they scrape the skin with an incisor and lap up the small amount of blood they draw	1
eating	3
eating near where you live	1
messy eaters	1
spits the remains on the ground	1
Bat biology	**41**
echo-location abilities are so acute to be able to pick the bugs off vegetation	10
locate their food sources and travel by making ultrasonic sounds that echo off solid objects	2
using their airborne sonar-like sensing ability	1

Table BT2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(bat biology continued)	
able to detect even the slightest movement, they catch their prey with their mouths, wings, or tail membranes	1
bats take shelter in foliage, caves, buildings, rock crevices and under tree bark	5
love to roost in tight spaces	2
if hibernation is interrupted too many times, a bat may not be able to survive due to the decrease in fat reserves	3
their hearts can go from 10 beats per minute during hibernation to 1,000 beats in flight	1
bats' cells are adapted to survive surges in metabolism	1
are the only mammals capable of flight	1
the finger bones of bats are elongated to support membranous wing	1
the hind limbs are also modified to allow bats to hang head-down and by their toes without expending energy	1
disperse in July and August	1
the pups are as playful as other baby animals	1
millions of pups cluster at up to 500 per square foot	1
have a slow reproductive rate, give birth to one pup only in June	2
have perfectly good eyesight	3
prefer temperatures between 80 to 100 degrees	3
are involved in pollinating flowers	1
Positive Attributions	**33**
cute	10
charismatic	1
adorable	1
they’re wonderful	1
beneficial	6
important	4
highly efficient	1

Table BT2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(positive attributions continued)	
not harmful	3
aren't exactly the scary creatures	2
not pests	1
fascinating	1
interesting	1
omens of good fortune	1
Negative Attributions	**30**
nuisance	3
pests	1
intruder	2
unwelcome residents	1
vexing	1
are portrayed as scary	2
fear	2
frightening	1
menacing	1
creepy	3
malevolent	1
threat	1
suspicious	1
demons	1
supernatural	1
maligned	2
not-so-cute	1
rats with wings	1
lacking the majestic beauty	1
negative image	1
lonely	1
messy	1

Table BT2. (continued)

Descriptors (items in bold are family names)	# of occurrences
Descriptive traits	**28**
winged	7
wingspan or length of bat	5
leathery-winged	1
weighing half an ounce	1
small	3
tiny	2
some of the world's largest	1
furry	2
dark brown or grayish fur	1
have a little wrinkled upper lip	1
a naked tail	1
sharp-fanged	1
young bats have no fur	1
they really don't like to make eye contact	1
Other bat traits	**20**
get a bad rap, misunderstood	5
misidentified as flying rodents	1
poorly understood today by the general population	1
suffered from negative connotations in Western culture	1
with their mouths open, and we think that's scary	1
shouldn't be spooky	1
blood doesn't rush to their heads when they hang upside down	1
don't actually sink fangs into flesh	1
contrary to popular belief, they are not major carriers of rabies	1
fewer than 1 percent of bats contract rabies	1
not one of the 13 is rampant with rabies, blind or drinks blood	1
shy	1
prefer a solitary existence	1
generally not aggressive toward people	2
perfect icon for Halloween	1

Table BT2. (continued)

Descriptors (items in bold are family names)	# of occurrences
Population size, distribution	**12**
bats have spread across all continents and into every habitat bar the polar extremes	8
vampire bats, and all live in Mexico, Central and South America	2
there are 13 species of bats in Florida	2

Table BT3. Negative impacts bats have on people and the environment.

Negative impact	# of occurrences
Health and safety	
Vector for disease transmission to people	24
Guano causes health problems	3
Bats threaten human safety (not specific)	1
Psychological impact	
Guano smell is disturbing to people, pets	6
Bats roosting in people's homes	2
Guano damages ecosystem	1
Total	**37**

Table BT4. Positive impacts bats have on people and the environment.

Positive impact	# of occurrences	# of occurrences in FWC quotes
Eat nuisance insects, provide pest control	38	3
Reduce the spread of disease by eating mosquitoes	8	0
Bats are pollinators and/or seed dispersers	8	0
Since they eat nuisance insects, fewer pesticides are used on crops and farmers can save money	7	1
Bats maintain healthy ecosystems/provide environmental benefits	4	0
General benefit	4	0
Since they eat nuisance insects, fewer pesticides are sprayed in communities	3	0
Bats maintain agriculture systems (pest control, pollination, seed dispersal)	3	1
Guano provides fertilizer	3	0
Tourist attraction	3	0
Provide educational opportunities	2	0
Important for scientific research (sonar, hibernation)	2	0
Total	**85**	**5**

Table BT5. Negative impacts on bats.

Negative impact	# of occurrences	# of occurrences in FWC quotes
White-nose syndrome	13	8
Bat habitat is being destroyed	6	2
Are becoming endangered or wiped out	5	0
Illegal take/killing/poaching of bats	2	0
Pesticide use on bats' prey	1	0
Nesting colony disturbance	1	0
Total	**28**	**10**

Table BT6. Bat problem-prevention actions.

Problem-prevention actions	# of occurrences	# of occurrences in FWC quotes
Don't try to handle or nurse sick/injured bats	3	1
White-nose syndrome guidance	3	0
Caving guidance	3	4
Contact FWC	0	3
Contact the health department	2	0
Don't feed wild animals or leave out food/attractants	1	0
Teach children not to handle wild animals	1	0
Vaccinate pets	1	0
Contact Animal Control	1	0
Contact both Animal Control and the health department	1	0
Information on rabies symptoms and treatment	1	0
Bat Blitz, bat information, citizen science bat surveys	1	0
Bat information from the Florida Bat Conservancy	1	0
Build a bat box (University of Florida)	1	0
Total	**20**	**8**

Table BT7. Bat problem frames.

Problem frame	# of occurrences
Habitat destruction/disturbance	4
Lack of knowledge/appreciation of bats	2
Fear of bats spreading rabies	1
Total	**7**

Table BT8. Text in newspaper articles interpreted as a frame for what Floridians can do to address problem interactions with bats (i.e., solution frames).

Solutions	# of occurrences
Prevent bats from/get rid of bats roosting in homes	6
Install a bat house to keep them out of human structures	5
Educate/learn more about bats/debunk myths	5
Bat guidance; leave bats alone/avoid contact	4
Incorporate bat habitat into bridges and other structures/make roosting structures available	3
Bat guidance, disease prevention	3
White-nose syndrome guidance	3
Learn to live with them	1
Contact pest removal/wildlife company	1
Total	**31**

Table BT9. FWC Sources mentioned in bat-related articles.

FWC Name mentioned	# of occurrences
Melissa Tucker	3
FWC General	2
Total	**5**

Table BT10. Bat newspaper article titles.

- 40-FOOT BAT TOWER GETS THE GO-AHEAD
- A workshop Thursday will focus on possible sites
- BACK TO DRAWING BOARD FOR BAT TOWER PLANNERS
- Backers favor island home for replica bat tower
- Bat swarm unnerves residents
- Bat tower location concerns residents
- Bat tower location narrowed: Temple Terrace City Council to decide among three parks
- Bats can help reduce the insects in your yard
- Bats found at Volusia Health Department's New Smyrna clinic
- Bats have a place, but it's not in the house
- Bats may hold key to longevity - Scientists studying their knack for DNA repair and ability to carry deadly viruses
- Bats play role in diminishing pests
- Bats, man!
- Calls to close caves as bats die
- Campus 'bat show' will soon be available online
- Cave closures sought over bat disease
- Committee considers new spot for bat tower
- Conservancy hoping to change bat misconceptions
- Disease responsible for killing 5M bats spotted in north Ga.
- Don't go batty if you see bats -- they kill bugs
- Eagle Scout builds a bat habit - Teen constructs condo for winged critters at park
- Festival educates people on role of bats in ecosystems
- Festival offers rare glimpse into day in the life of a fruit bat
- Festival offers rare glimpse into day in the life of a fruit bat
- FRIENDS AND FOES OF A NEW BAT TOWER
- Get up close and personal at Florida Bat Festival
- Get up close to bats during Lubee's festival
- Input sought on bat tower: A workshop Thursday will focus on possible sites;
- Learn truth about bats at event
- Live bat may have given kids rabies
- Location had several positives, council members say
- Maitland bats' neighbors say: Please fly away
- Museum launches streaming video of bat house
- Natural Wakulla: There are 11 species of bats in Wakulla County
- No blood-suckers to be found at Florida Bat Festival
- No more bats at New Smyrna Health Department
- Northern disease could affect local bats
- Public has little to fear from bats
- Quick Read: Bats removed from school were not a health risk

Table BT10. (continued)

- Rabid bat prompts warning in Camden Health Department urges avoiding wildlife, watching for the unusual
- Rabies alert extended for 60 days in Bay County
- RABIES FEARED AFTER BAT BITE
- Repulsive roommates
- School Board goes to bat for school's pest cleanup
- Scientists trek into the national forest to study bats
- Scout Park picked for bats;
- SHRIEKS VS. SQUEAKS IN TEMPLE TERRACE
- St. Augustine has its share of bats in the belfry
- THREE PARK SITES STUDIED FOR LANDMARK BAT TOWER
- To help with pest control at your house, consider the bat
- U.S. Forest Service sponsors BatFest 2012
- UF's campus 'bat show' will soon be available online
- Welcome, skeeter eaters
- Who to Call? Polk County Animal Control
- Winging home: - Bat houses installed at SCF

Table BT11. Names of newspapers in which bat-related articles appeared.

Newspaper	# of articles
The Tampa Tribune	12
Gainesville Sun	8
Orlando Sentinel	5
Tampa Bay Times	5
Florida Times-Union	3
Wakulla News	3
Charoltte Sun	2
St. Petersburg Times	2
Ocala Star-Banner	2
Daytona Beach News	2
Stuart News	2
St. Augustine Record	2
Sun Sentinel	1
Citrus County Chronicle	1
Ledger	1
News Herald	1
Jackson County Floridian	1
Total	**53**

Table BT12. Years in which sampled bat-related newspaper articles were published.

Year	# of articles
2011	21
2012	11
2013	21

Table BT13. FWC bat documents analyzed, by document category.

Document type	# of occurrences
Bat factsheet	6
Public brochure	2
Information sheet on bat exclusions	2
FAQ document	1
Presentation for general audiences	1
Information from research reports/papers	1
Internal, staff training or guidance	1
FWC white paper	1
Florida law	1
Total	**16**

Table BT14. Sources of FWC bat-related documents.

Document source	# of documents
University of Florida IFAS	5
Other NonFWC	5
FWC	3
Bat Conservation International	2
State of Florida	1

Table BT15. Bat descriptor code families in FWC documents.

Descriptors	# of occurrences
General traits, natural history	23
Incorrect assumptions about bats	11
Bat actions	8
Positive attributions (e.g. beautiful, beneficial)	5
Negative attributions	3
General descriptors	2
Total	**52**

Table BT16. Negative impacts bats have on people or the environment mentioned in FWC materials.

Negative impact	# of occurrences
Vector for disease transmission to humans	10
Roost in people's homes	4
Bat guano smells	3
Bat guano causes health problems for people	2
Total	**19**

Table BT17. Negative impacts people have on bats mentioned in FWC documents.

Negative impact	# of occurrences
People destroy bat habitat	11
People disturb bat roosts	7
Pesticide use	3
White nose syndrome	2
Bat species are becoming endangered or extinct	2
Wind turbines kill bats	1
Total	**26**

Table BT18. FWC document statements related to positive impacts bats have on people and the environment.

Positive impact	# of occurrences
Are important source of pest control	21
Maintain a healthy ecosystem	5
Guano is used as fertilizer	4
Seed dispersal	3
Research on bats has led to human advances	2
Control mosquitoes	1
Eat insects so fewer pesticides are needed	1
Total	**37**

Table BT19. FWC document statements related to bat problem-prevention actions.

Problem-prevention actions	# of occurrences
Don't handle sick bats	10
Recognize rabies symptoms and treatment options	7
Vaccinate pets against rabies	5
Contact the health department or animal control for more information	5
Teach children not to handle animals	2
Caving guidance	1
Total	**30**

Table BT20. Statements in FWC bat-related documents suggesting solutions to negative human-bat interactions.

Statement	# of occurrences
Prevent bats from entering or roosting in homes (remove if they do)	25
Build bat houses	9
Learn to live with bats	3
Contact pest control	3
Do not remove bats if they are not a nuisance	2
Educate people about bats	2
Make roosting structures available for bats	1
Prevent rabies by public health education	1
Provide foraging habitat for bats	1
Total	**47**

Table BT21. FWC press releases on bats topics, 2011 – 2013

Release Title	Release Date
North Florida nightfall brings out diversity of bats, biologists	6/7/2012
FWC invites input on draft plans to conserve 8 species, including beach-nesting shorebirds	3/13/2013
Cavers asked to take precautions to prevent disease affecting bats from moving into Florida	3/20/2013

APPENDIX G (LIONFISH CONTENT ANALYSIS TABLES)

Table L1. Lionfish descriptor code families in all newspaper articles.

Descriptors	# of occurrences	# of occurrences in FWC quotes
General descriptors or lionfish status (venomous spines, invasive species, etc.)	109	1
Origins, population size, distribution	79	5
General traits (size, patterns on skin, etc.)	67	0
Negative attributes (threat, dangerous, etc.)	31	0
Lionfish eating/feeding habits	26	0
Lionfish biology (high reproductive rate)	18	3
Positive attributes (beautiful, ornate, etc.)	12	0
Lionfish actions (flaring, hovering)	3	0
Total	**345**	**9**

Table L2. Descriptor details within lionfish descriptor code families, for all newspaper articles.

Descriptors (items in bold are family names)	# of occurrences
General descriptors or status	**109**
invasive	54
nonnative	20
exotic	5
venomous	19
predator	4
tough	1
species	2
are not afraid of divers	1
as the fish's taste and texture has been likened to that of hogfish and other snapper species	1
it looked pretty crazy	1
seemingly docile specimen	1
Population size, distribution	**79**
native to the Indian and Pacific oceans	22
tropical fish	1
arrival in Florida: 1990s	6
introduced to Atlantic waters from loosed aquarium occupants	2
they didn't start showing up in force in southeast Florida and the Keys till about five years ago	1
two Florida Tech students first spotted lionfish in the lagoon region in 2010, inside Sebastian Inlet	1
expanding to new areas in the ocean	14
explosive population	6
proliferating	5
everywhere	1
increasing in population	2
in deep waters	6
found in a variety of waters	2
more tolerant of the colder water far offshore than many native species	1

Table L2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(population size, distribution continued)	
have taken hold around Florida and the Caribbean	2
common on Florida's East Coast	1
invaded the Gulf of Mexico	1
more common in less-explored areas	1
reproducing in the deep recess of the Gulf and moving in toward shore	1
shown a reduction in the numbers of lionfish at key locations around the island studied	1
docks and seawalls make good habitats	1
spotted lionfish on shallow reefs and deep wrecks	1
General traits	**67**
venomous spines	11
possesses three sets of venomous fins	6
equipped with venomous dorsal	3
the pectoral fins of lionfish are long and showy with a row of dorsal spines	3
have up to 18 needlelike spines that inject venom when they are pressed	2
have ventral, pectoral and anal spines	2
18 venomous spines as a defense mechanism to fend off other predators	1
prickly fish	1
barbed	1
poisonous	1
12- to 15-inch	5
fish get up to 15 inches	2
fish are no larger than 18 inches	2
measures a modest 9 inches	1
red-striped	4
candy-striped	4
striped	2
colorful	4
the body is striped with bands of brown, rust, and white	1
lovely mane of elaborate fins that rings their bodies	2
nonvenomous fins	1

Table L2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(general traits continued)	
small	1
about the size of a pinfish	1
diminutive	1
are slow moving	1
have enormous mouths in relation to the size of their bodies, similar to a largemouth bass	1
the average life span of a lionfish is approximately eight years	1
bellies looked full	1
different	1
Negative Attributions	**31**
threat	8
dangerous	2
destructive	2
extremely disruptive	1
dreaded	2
marauding	1
infiltrate	1
fierce	1
pest	2
nuisance	2
detrimental	1
annoyance	1
pestilent fish	1
glutton of a fish	1
alien invader	1
freakish enemies of nature	1
an unnatural link	1
nothing cute	1
notorious in the Caribbean	1

Table L2. (continued)

Descriptors (items in bold are family names)	# of occurrences
Eating/feeding habits	**26**
voracious	13
eat nearly all other fish	8
have a ferocious appetite	1
with a ravenous appetite	1
attack prey by first sucking in water and expelling it forcefully, creating a pressure wave aimed at stunning the smaller fish, which they then inhale	1
don't really bite hooks	1
opportunistic feeders	1
Biology	**18**
reproduce quickly	16
are relatively resistant to parasites	1
they can get out of the current, not expend a lot of energy and just feed	1
Positive Attributions	**12**
beautiful	8
vibrant	1
ornate	1
pretty	1
delicious	1
Actions	**3**
flaring	1
hovering	1
sitting boldly outside a cavern	1

Table L3. Negative impacts lionfish have on people and the environment.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Ecological impacts		
Threatens/causes problems for reef systems	29	0
Preys on fish species- generally	25	0
Competes for food with native fish	19	0
Preys on fish species - specifically in reef habitat	14	1
Cause fish declines- no specific explanation	12	0
General damage	5	2
Expanding into other habitats	4	0
Have an effect on ecosystem/fish populations	4	0
Invasive species	3	0
Health and safety impacts		
Toxic/venomous/wound humans	18	6
Economic impacts		
Preys on fish species - bad for economic reasons	5	0
Unspecified		
Have a negative impact	7	4
Total	**145**	**13**

Table L4. Negative impacts on lionfish.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Removal/eradication/collection	27	0
Harvest competitions/round-ups/derbies	23	0
Spear fishing	8	0
Don't need a fishing license/open season	7	0
No fishing limit	7	0
Recruit/encourage /incentives to divers	6	0
Eat lionfish (home or restaurants)	4	0
Divers removing lionfish	2	0
Commercial harvesting	2	0
Reduce or control the population	1	0
Total	**87**	**0**

Table L5. Lionfish problem-prevention actions.

Problem-prevention actions	# of occurrences	# of occurrences in FWC quotes
Report sightings of lionfish	2	0
Kill lionfish	1	0
Learn more about lionfish by visiting FWC website	1	0
Total	**4**	**0**

Table L6. Text in newspaper articles interpreted as a frame for why Floridians are experiencing problem interactions with lionfish (i.e., problem frames).

Problem frame	# of occurrences	# of occurrences in FWC quotes
Have no predators	22	0
Multiply/reproduce/disperse rapidly	6	0
Invasive species (threaten reef systems)	3	0
Are an introduced species	3	0
Total	**34**	**0**

Table L7. Text in newspaper articles interpreted as a frame for what Floridians can do to address problem interactions with lionfish (i.e., solution frames).

Solutions	# of occurrences	# of occurrences in FWC quotes
Change rules/regulations to make it easier to take lionfish (e.g., allow any method of take, remove catch limit, etc.)	24	17
Encourage/hold events (e.g. derbies, harvests, tournaments)	19	2
General encouragement of lionfish removal/taking	18	7
Diver education (e.g. how to handle, what to do if stung)	11	0
Reduce or control the population	11	0
Campaigns encouraging people to eat lionfish	11	1
Conduct research	10	0
Eradicate/remove in general	7	2
New techniques/technology to kill lionfish	7	0
Establish lionfish predators	4	0
Create general awareness (social media campaigns)	3	4
Creation of nonprofits (e.g. Lionfish Control Coalition)	3	0
Report sightings	2	0
Help from the public requests	2	0
Lionfish eradication month	1	0
Total	**133**	**33**

Table L8. FWC sources quoted in lionfish articles.

FWC Name mentioned	# of occurrences
FWC General	6
Amanda Nalley	5
Jessica McCawley	2
Jeff Beal	1
Martha Bademan	1
Jenny Tinnell	1
Bobby Dube	1
Total	**17**

Table L9. Titles of 2011-2013 lionfish-related newspaper articles included in analysis.

- 15 lionfish caught in local roundup
- 17.4-pound total wins Budget Bass
- 335,000 venomous lionfish in the Keys
- Assault begins on nonnative lionfish in Florida coastal waters
- Captain calls for more hunters - Lionfish education may also include moray eels and divers
- Collier Commission notebook: Decisions on $92 million lawsuit, spearfishing and more
- Divers hunt lionfish off West Palm Beach
- Divers take dead aim at invasive fish species
- Divers targeting lionfish on Florida reefs - It’s open season on invasive lionfish on the reefs of Florida and the Bahamas.
- DYING CORAL'S ECONOMIC RIPPLE ;
- Editorial: Lionfish story gets only worse
- Editorial: Local blogger wins lionfish hunt crusade
- EXPERTS SEEK ANSWERS ON LIONFISH IMPACT
- Fishing tourney helps build reefs
- Florida losing species that boost industries
- Florida permanently waives license to harvest lionfish - Officials encourage lionfish harvests
- FWC asks public to help kill lionfish
- FWC lifts snook ban starting Sept. 1
- FWC may further ease lionfish rules
- Good For You
- Invasive lionfish finds finhold in the Gulf
- Invasive species will be targeted this weekend.
- It's open season;
- Killing off lionfish -- no license required
- LETTERS TO THE EDITOR
- 'Lion King' halts invaders - Fisherman puts invasive species on Keys menus
- Lionfish invasion roars onward
- Lionfish loom off coast
- Lionfish new top predator of the reef - Restrictions lifted for Saturday derby to thin out numbers
- Lionfish still attacking Florida Keys - KEY LARGO Permit needed to catch invasive species in some areas
- Lionfish target of tourney
- Lionfish tourney to address invasive presence
- Lionfish wipeout deemed unlikely
- Local diver spears lionfish; biologists say they're here to stay
- Mayor: Tax cut won't decrease resident services - LAYTON

Table L9. (continued)

- Mission is to spur commercial harvest, restaurant fare - Coalition forms to combat lionfish
- New trap may fight invasive lionfish - A trap developed by Frank Cooney Jr. — whose family owns Bimini Sands — to catch unwanted lionfish is attracting attention.
- Officials ease rules to catch lionfish ;
- on invasive lionfish;
- Open season lionfish may become permanent in Florida
- Outdoors - Fall fishing offers variety and 'wild' surprises
- Outdoors column: Rule changes are the latest victory in fight against lionfish
- Special fishing zone closer - KEY LARGO
- state briefs
- State removes 100-pound bag limit on invasive lionfish
- Stepping up the war on lionfish
- Submarine is latest weapon to fight invasive lionfish
- Summit will target venomous lionfish
- Target: lionfish Vero Beach couple launching underwater assault on invader
- Temporary waiver of license rule is now permanent
- UF STUDY: LIONFISH ROUNDUPS MAY BE USELESS
- Underwater Wakulla- September 12, 2013 - What’s next with the lionfish?
- WHAT'S FOR DINNER? LIONFISH - Best way to halt venomous marine predator might just be with a frying pan
- Wind, chop expected to affect hunt - Sanctuary officials: While you're at it, zap a lionfish or two

Table L10. Names of newspapers in which lionfish-related articles appeared.

Newspaper	# of articles
The Tampa Tribune	12
Key West Citizen	9
Sun Sentinel	6
Palm Beach Post	6
Naples Daily News	5
Miami Herald	5
Charoltte Sun	4
Stuart News	3
Sarasota Herald Tribune	2
Englewood Sun	2
Northwest Florida Daily News	2
Orlando Sentinel	1
Bradenton Herald	1
Wakulla News	1
Bonita Daily News	1
North Port Sun	1
Total	**49**

Table L11. Years in which lionfish-related newspaper articles in the analysis were published.

Year	# of articles
2011	8
2012	18
2013	24

Table L12. FWC lionfish documents analyzed, by document category.

Document type	# of occurrences
Public brochure	1
Internal summit summary report	1
Total	**2**

Table L13. Sources of FWC lionfish documents.

Document source	# of documents
FWC	2

Table L14. Lionfish descriptor code families in FWC documents.

Descriptors	# of occurrences
Lionfish population size	3
Biology/ natural history	3
Lionfish status	2
General descriptor	1
Total	**9**

Table L15. Negative impacts lionfish have on people or the environment mentioned in FWC materials.

Negative impact	# of occurrences
Venom is dangerous to humans	3
Threaten reef systems	2
Prey on native fish species	2
Expanding into other habitats	1
Threaten native species and ecosystems	1
Total	**9**

Table L16. FWC document statements related to lionfish problem-prevention actions.

Problem-prevention actions	# of occurrences
Visit FWC website	1
Total	**1**

Table L17. Problem-framing statements in FWC lionfish documents.

	# of occurrences
Lionfish have no natural predators	2

Table L18. Statements in FWC lionfish documents suggesting solutions to negative human-lionfish interactions.

Statement	# of occurrences
Lionfish eradication encouragement	8
General population control or removal	7
Eat lionfish campaign	3
General public awareness	3
Conduct more research on lionfish	2
Discourage the import of lionfish	2
Lionfish derbies	1
Diver education	1
Develop new techniques to kill lionfish	1
Report sightings	1
Management should include stakeholders	1
Total	**30**

Table L19. FWC press releases on lionfish topics, 2011 – 2013

Release Title	Release Date
FWC increases lionfish harvest opportunities, asks public to help	August 13, 2012
Florida, we have a lionfish problem	Nov 14 2012
FWC to unveil photo contest, launch 'Lionfish Control Month' with Twitter chat	March 26, 2013
FWC to permanently waive license requirement for lionfish harvest	March 28, 2013
FWC to permanently waive license requirement for lionfish harvest	Apr 17, 2013
FWC permanently waives license requirement for lionfish harvest	June 12, 2013
Spearfishing allowed in Collier County state waters starting June 30	June 24, 2013
Lionfish derby offers real life experience	October 1, 2013
FWC Lionfish Summit Oct. 22-24 in Cocoa Beach	October 21, 2013

APPENDIX H (TEGU CONTENT ANALYSIS TABLES)

Table T1. Tegu descriptor code families in all newspaper articles.

Descriptors	# of occurrences	# of occurrences in FWC quotes
General traits (size, patterns on skin, etc.)	93	0
General descriptors or tegu status (invasive, exotic, etc.)	28	0
Population size/number of species/distribution	22	0
Tegu eating/feeding habits	15	0
Tegu biology	7	0
Tegu actions/behavior	6	2
Positive attributes (beautiful, intelligent)	3	0
Total	**174**	**2**

Table T2. Descriptor details within tegu descriptor code families, for all newspaper articles.

Descriptors (items in bold are family names)	# of occurrences
General traits (size, weight, color)	**93**
lizard	25
animals	1
beast	1
reptiles	6
length of adult tegu	13
big as a Burmese python	1
big/large	8
baby Tegu will only be a few inches long	1
tegu weight	5
black and white	10
banding along the tail	1
many colors	1
red and gold	1
speckled	1
sharp teeth	6
claws	5
strong jaws	2
forked tongue	1
look like small snub-nosed gators	1
(Tupinambis Merianae)	1
shed regularly as it's growing	1
young	1
General descriptors/status	**28**
exotic species	11
invasive species	3
invaders	2
non-native	2
alien species	1
fairly docile	2
couch potato	1

Table T2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(general descriptors/status continued)	
lethargic	1
fast growers	2
wild animals	2
a dinosaur	1
Population size/number of species/distribution	**22**
Argentine	12
native to South America	3
native to areas of Brazil, Paraguay, Uruguay and Argentina	1
have established breeding populations around Tampa and Homestead	1
adaptable to a number of different habitats	1
can live about anywhere	1
can live in swampy areas, but prefer dry land	1
colonies	1
free-roaming	1
Tegu eating/feeding habits	**14**
will eat about anything from mice to beetles in addition to fruits and veggies	5
omnivorous	1
favorites include rodents, ground turkey, gizzards, beef liver, and chicken, all in the raw form	1
egg lovers	3
predators	1
favors a diet of steamed sweet potato and hard-boiled eggs	1
enjoy fruits as treats	1
foragers	1
as babies will eat a lot and on a regular basis	1
Tegu biology	**7**
can survive in temperatures as low as 35 degrees and as steamy as any South Florida summer	2

Table T2. (continued)

Descriptors (items in bold are family names)	# of occurrences
(tegu biology continued)	
can live for about a decade	1
females can lay 35 eggs a year	2
hibernate in burrows from October until about January or February, then emerge once again to forage and reproduce	1
Tegus hibernate through the winter and can withstand North Florida's less mild winter	1
Actions	**6**
escaped	1
extremely fast	1
hides at night	1
when it moves: During the day	1
not normally aggressive	1
predatory	1
Positive attributes	**3**
beautiful	1
intelligent	1
popular	1

Table T3. Negative impacts tegu have on people and the environment.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Ecological impacts		
Eat just about anything, especially eggs	10	0
Threat to native species	8	4
Displacing gopher tortoises	4	0
Cause ecological damage	3	0
Compete with native animals	1	0
Affect native species generally	1	0
Other impact categories		
Aggressive/frightening	2	0
Problematic (in general)	2	0
Escaped/released pet tegu become a problem	2	2
Eat farm eggs	1	0
Total	**34**	**6**

Table T4. Negative impacts on tegu.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Trap them	6	0
People (non-agency) kill them	1	0
Euthanize them	1	0
Tegu egg predation	1	0
Total	**9**	**0**

Table T5. Positive impacts tegu have on people and the environment.

Positive impact	# of occurrences	# of occurrences in FWC quotes
People have tegu as pets	6	0
People sell tegu (economic)	1	0
Total	**7**	**0**

Table T6. Positive impacts on tegu.

Positive impact	# of occurrences	# of occurrences in FWC quotes
Relocated tegu to a park	1	0
Total	**1**	**0**

Table T7. Tegu problem-prevention actions.

Problem-prevention actions	# of occurrences	# of occurrences in FWC quotes
Learn more about or report tegu by visiting FWC website	1	5
Set traps to capture tegu	1	0
Ask people not to release pets	0	2
Guidance on how to handle tegu	0	1
Ask people not to try to capture tegu	0	1
Total	**2**	**9**

Table T8. Text in newspaper articles interpreted as a frame for why Floridians are experiencing problem interactions with tegu (i.e., problem frames).

Problem frame	# of occurrences	# of occurrences in FWC quotes
People release pet tegu	3	2
Total	**3**	**2**

Table T9. Text in newspaper articles interpreted as a frame for what Floridians can do to address problem interactions with tegu (i.e., solution frames).

Solutions	# of occurrences	# of occurrences in FWC quotes
Report sightings	4	0
Trap tegu	3	17
FWC Exotic Pet Amnesty Days	2	2
Peacock patrols	2	0
FWC capture	1	0
Trap them and sell as pets	1	0
Euthanize	1	0
Conduct more research on tegus	0	1
Total	**14**	**20**

Table T10. FWC Sources mentioned in tegu-related newspaper articles.

FWC Name mentioned	# of occurrences
Jake Edwards	4
FWC general	3
Jenny Eckles	2
Jerry Shores	2
Kristin Sommers	2
Nathan Brock	1
Stan Kirkland	1
David Norman	1
Carli Segelson	1
Total	**17**

Table T11. Titles of 2011-2013 tegu-related newspaper articles included in analysis.

- 33 exotic lizards captured in Bay County
- A new exotic threat:;
- All About Pets: Ever Heard of The Tegu Lizard?
- Escaped Tegu lizard captured - KEY LARGO
- FLORIDA'S ALIEN INVADERS
- FWC captures another invasive Tegu in Cedar Grove
- HUNT IS ON FOR TEGU LIZARDS IN S. FLORIDA
- Hunt is on for Tegu lizards in South Florida
- Invasive Lizard Reported in Polk
- Lizard stalking Florida
- Peacock patrol
- SOUTH AMERICAN TEGU LIZARD CAUGHT IN DAVIE

Table T12. Names of newspapers in which tegu-related articles appeared.

Newspaper	# of articles
Miami Herald	2
Ledger	2
News Herald	2
Orlando Sentinel	1
Key West Citizen	1
Sun Sentinel	1
Palm Beach Post	1
St. Petersburg Times	1
Total	**11**

Table T13. Tegu Newspaper Article Coverage.

Year	# of articles
2011	2
2012	0
2013	9

Table T14. FWC tegu documents analyzed, by document category.

Document type	# of occurrences
Factsheet	4
Public brochure/flyer	2
Quick reference guide	1
Bio-profile	1
Total	**8**

Table T15. Sources of FWC tegu documents.

Document source	# of documents
FWC	4
University of Florida IFAS	4

Table T16. Tegu descriptor code families in FWC documents.

Descriptors	# of occurrences
General traits	12
Tegu status	9
Population size	9
Biology	9
Feeding habits	4
Behaviors	1
Total	**44**

Table T17. Negative impacts tegu have on people or the environment mentioned in FWC materials.

Negative impact	# of occurrences
Threaten native species	5
Danger to human safety	4
Could become an agricultural pest	2
Eat anything, especially eggs	1
Displace gopher tortoises	1
Cause bacterial contamination of food crops	1
Total	**14**

Table T18. FWC document statements related to tegu problem-prevention actions.

Problem-prevention actions	# of occurrences
Responsible tegu pet ownership	3
Total	**3**

Table T19. Statements in FWC tegu documents suggesting solutions to the tegu problem.

Statement	# of occurrences
Report tegu sightings	7
Trap tegu	5
Exotic Pet Amnesty Day	2
Prevent introduction of species into the wild	1
Monitor tegu populations	1
Total	**16**

Table T20. FWC press release on tegu topics, 2011 – 2013.

Release Title	Release Date
FWC asks for help spotting tegus in Panama City	4/26/2013

APPENDIX I (MONKEY CONTENT ANALYSIS TABLES)

Table M1. Monkey descriptor code families in newspaper articles.

Descriptors	# of occurrences	# of occurrences in FWC quotes
Famous monkey (Mystery Monkey, etc.)	52	0
Actions/behaviors of a particular monkey	51	1
General traits (size, weight, etc.)	41	4
Population size/distribution	39	5
Anthropomorphism	39	0
General descriptors/status	30	0
Monkey eating/feeding habits	21	0
Interactions with people (not positive or negative)	11	0
Negative Attributions	10	0
Wild animal/should be wild	9	0
Positive Attributions	8	1
Monkey biology (natural history)	5	0
Total	**316**	**11**

Table M2. Monkey descriptor code families related to interactions with people, in newspaper articles.

Monkeys are …	# of occurrences	# of occurrences in FWC quotes
Elusive/avoiding capture/escaping	40	3
A threat to people	33	0
Sighted, seen	26	1
Pets or in zoos	20	6
Captured or kept in cages	13	0
Not a threat to people	4	0
Total	**136**	**10**

Table M3. Descriptor details within monkey descriptor code families in all newspaper articles.

Descriptors (items in bold are family names)	# of occurrences
Famous monkey (Mystery)	**52**
Mystery Monkey	25
goes by Mr. Monk	5
a macaque named Doc Holliday	4
new name: Cornelius	2
all him Tampa Bay's Other Monkey, a banana-chomping Salieri to Mystery Monkey's Mozart	1
JayJay was a 9-year-old macaque monkey	1
celebrity status with hundreds of friends on a Facebook page	4
he was also featured on Comedy Central's "Colbert Report"	3
became nationally famous in 1993 when National Public Radio profiled them	1
the monkey has become something of an endearing figure in Tampa Bay	1
famous	1
is a YouTube hit	1
the monkey's plight has delighted followers since the media began tracking sightings three years ago	1
some have speculated that he was forced out of a colony of monkeys in Silver Springs before launching his famous life on the lam	1
source of debate, myth and urban legend	1
Actions of a particular monkey	**51**
climbed or swinging in a tree	6
climbed onto the roof	4
rattle branches	2
looks around/stares into space	4
peer through windows	2
observes golfers	1
watching traffic passing	1
roaming	2
scampered into the wood	1
hide among overgrown bushes	1
always comes back	1

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(actions of a particular monkey continued)	
perch on the bathroom windowsill/swinging from a showerhead	2
napped on patios	1
runs behind the woodpile, peering around the corner	1
then he looked up at the feeder	1
crab-crawling down a post, climbs over a stack of firewood and walks over to the middle of the porch	1
grunted and banged the cage	1
if he hears any rustle in the woods he will stare and grunt at it	1
It is an aggressive warning	1
flipped out	1
clicking of teeth	1
scratching	1
rushed toward him	1
sat on the ground	1
lay on his side, his chest heaving to a halting rhythm	1
a sleeping baby	1
perched on a fence	1
taken a seat on a guardrail	1
they could swim	1
tolerates squirrels and raccoons who come after his fruit and nut dinners, softly backhanding them if they get too close	1
washes his sticky hands in a nearby stream	1
playing with pumpkins	1
she perches Myra on her head or shoulder	1
the animal had jumped on her mother's back	1
he bows his head, looking up only when they walk away	1
he squeezed a tiny hand through the bars and grasped his finger	1
General traits (size, weight, color)	**41**
monkey weight	5
height and weight of monkey	2
length or height of monkey	2

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(general traits continued)	
little/small monkey	5
age of monkey	2
infants and juveniles	2
his tiny hand lay loose and upturned by his side	1
pint-sized features	1
narrow face	1
teeth are over an inch long	2
he's got fangs	1
golden fur	1
with long 12-inch hairs on his back	1
furry creatures	1
has a long tail with light coloring in the face, neck and shoulders and darker fur on the rest of its small body	1
their tails are longer than their bodies	1
amber eyes	1
the size of a terrier, less than half as large as he will likely be when full-grown	1
marmosets, which grow up to be the size of a soda can	1
able to move at 35 mph	1
extremely strong with a strong bite	1
large primate	1
an adult in good shape	1
lean	1
Macaques	1
Marmosets	1
The monkey is most likely a rhesus macaque	1
overweight	1
Elusive/avoiding capture/escaping	**40**
eluded officials/authorities/trappers	11
elusive/evasive	3
who evaded capture	2

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(elusive/avoiding capture/escaping continued)	
he ran/dashed off/vanished	6
escaped a trap/cage/net	4
escaped from owner	4
he has had experience escaping before	1
on the run/remains at large/on the lose	4
spent the past few years traipsing around Tampa Bay	1
hiding	1
occasionally disappears for a day or two at a time	1
ran across the street and looked back at me, again on all fours, and then hopped over the fence and ran off into the woods	1
strong natural swimmers and quickly escaped the island	1
Anthropomorphisms	**39**
wearing baby diapers	3
one time he even dressed up as Santa Claus	1
the creature probably has been lonely	3
he's not in a community, and I think these animals are just like humans. They need a community	1
It looked like it was contemplating life	1
appears aloof, glancing left and right, even though he knows he's being watched	1
the rhesus macaque has found his comfort zone	1
appears very much at home in one quiet spot	1
he's never going to leave. The nice woods make him feel comfortable	1
he has a girlfriend now	1
he needs a family, he needs a social group, and he found it	1
he was part of the Schwall family	1
funny mannerisms	1
surprising wiles	1
always smiling, always being funny	1
yawned and grinned	1

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(anthropomorphisms continued)	
gentle with the sickly, old cat, sometimes picking her up and moving her to a sunnier spot on the patio	1
he played with kids in the pool	1
he rides shotgun	1
humanlike abilities to press buttons, turn pages or open bottles	1
it looked like someone with long arms, down on its knees, pulling weeds at the fence line	1
little humanlike hands	1
multiple images of young monkeys cavorting in the bathtub	1
ridden a Jet Ski and sped down Largo's main drag in a pickup	1
she is able to control the male, who is there mainly for protection of the group. If she can't control him by herself, she calls in her sisters to get him back in line again	1
often follows the wife as she moves from room to room. He watches her fix dinner and listens to the husband when he speaks	1
The alpha male named King Philip was being pestered by a younger monkey. King Philip bared his teeth, but when that didn't settle down the young upstart, King Philip got physical. Before the attack got out of hand, however, the females came in and broke up the fracas.	1
he waits on the firewood pile for his morning banana and walks ahead of the elderly woman, as if to protect her	1
the monkey loves to peer into the large windows surrounding the home	1
she's got it with a blanket and a bottle	1
she's my baby	1
they're like children that never grow up	1
wee primate	1
the monkey outwitted its pursuers	1
He had a vasectomy. They're happy	1
Population size/number of species/distribution	**39**
indigenous to Central and East Asia/native of West Africa/South America	3
In the wild across Latin America, the monkeys tend to remain in groups of about 10 to 35	1
originally from southeast Asia, the monkeys have adapted well to the Florida surroundings	1
imported from Africa to be sent to zoos	1

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(populations size/number of species/distribution continued)	
roaming/running wild in Florida	3
monkeys living in Silver Springs Area	3
monkeys living on public lands, state sovereign lands, forests, and private properties	3
living in Florida mangroves	3
lives in the same wildlife compound in Seminole where Cornelius - as the Mystery Monkey was named by his captors - is now being kept	2
tracking of an individual or small number of monkeys in various areas of Florida	2
At first, as the monkeys spread into the surrounding forest, they were just a local oddity	1
two of the monkeys live behind Motel 6	1
There are two troops -- or families -- on the north side of the canal, and at one time there was another large troop behind the motel	1
a troop of monkeys has lived there since	1
four distinct groups of monkeys that have their own territories along the river	1
others live near Nature's Cove	1
most of the monkeys live in the park area	1
total population size	3
population size dropping	2
the population is growing	2
their numbers are stable	1
experts estimate there are some 100, 000 capuchins in the United States	1
there has been no expansion that I know of to other geographic areas	1
General descriptors/status	**30**
exotic species/wildlife	5
nonnative	4
invasive species	2
they don't belong here	2
invasive exotic	1
non-native	1
non-native and invasive species	1
not protected	1
aren't indigenous to Florida	1
he wasn't aggressive at all	1
relatively docile	1

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(general descriptors/status continued)	
in very good shape/physical health	2
spindly primates	1
'greyhounds' of the primate world	1
agile	1
exhibit aggressive behavior	2
alpha males and females	1
captive wildlife	1
They are known for their complex social behavior	1
Monkey sightings	**26**
monkey sighting in a particular city/county in Florida	7
there's a new macaque in town	1
gained notoriety in recent years after numerous sightings throughout the bay area	1
sighted by a family's home	6
monkey seen by a country club	2
frequented a boat dock	1
had his mug caught on hunting-camera feeds	1
there's a monkey in front of your pond	1
He has given them names, including King Philip, Isabella, Venus and Squish, and recognizes them on sight.	1
it stood up and just stared at me	1
Swartz waved his arms and shooed the monkey away	1
roaming	2
walking alongside U.S. 1	1
Monkey eating/feeding habits	**21**
nibbled on bananas	4
he ate handouts/fed by humans	3
begging for food along the banks of the Ocklawaha	1
eat a diet very similar to what people eat: fruits, vegetables, Vienna sausages, pasta	1
he shows up with a strange banana or cookie	1
loves Oreo cookies, twisting the tops off and licking the frosting	1

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(monkey eating/feeding habits continued)	
feed on fruit, insects, grubs, and small birds and reptiles	2
eat fruits, nuts, leaves, etc.	2
ate birdseed littering the ground	1
grab mangoes and avocados from trees	1
mostly vegetarian	1
they are adept at catching frogs and cracking nuts	1
have to feed them a lot	1
pretty hungry	1
Captive monkeys as pets	**20**
pet	6
he was more than a pet really, he was awesome	2
it was probably a pet that got loose	2
popular pets in South Florida	1
the monkeys can be trained as pets	1
it is with a state permit, and the ones Hammonds sells are among the most common of monkey pets, if one was to have a pet monkey	1
owning a rhesus monkey is legal with proper permitting	1
baby monkeys for sale	1
being fed and cared for	1
has a home with the family for as long as he wishes	1
he keeps the adults in large cages behind his home and the babies inside	1
his monkey in a travel bag	1
takes her to football games and friends' homes	1
Captured monkey	**13**
kept or living in a cage	3
the monkey was trapped in the cage	1
watched other monkeys through the chain-link of his 6-by-10 foot enclosure	1
darted and captured	2
he swayed as the chemicals coaxed him into slumber	1
eluded wildlife officials before finally being caught	2
captured Nov. 21 and is in quarantine in a zoo	1
captured by three animal control officers	1

Table M3. (continued)

Descriptors (items in bold are family names)	# of occurrences
(captured monkey continued)	
tested for the disease after he was caught	1
Wild animal/should be wild	**9**
he's still a wild animal	3
wild	2
a wild rhesus macaque	1
animal that was born in the wild	1
have been in the wild, reproducing for years	1
wrong to cage monkeys that had been wild for so long	1
Monkey biology	**5**
each group is led by an alpha female	2
tend to be territorial	1
The virus is dormant, and they only start to shed when they get stressed. There has never been a documented case of transmittal in the wild	1
there are 22 species of macaque monkeys inhabiting various parts of the globe	1

Table M4. Negative impacts monkeys have on people and the environment.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Health and safety		
Aggressive and threaten human safety	28	5
Vector for disease transmission to people	6	3
Psychological impact		
Negative psychological effect (e.g. frightening, scary)	6	0
General nuisance	3	0
Ecological impact		
Threaten the normal balance of Florida's ecosystems	2	2
Total	**45**	**10**

Table M5. Positive impacts monkeys have on people and the environment.

Positive impact	# of occurrences	# of occurrences in FWC quotes
They are a tourist attraction	10	0
People enjoy seeing monkeys	7	0
Monkeys are an important research tool	6	0
People are curious about monkeys	1	0
People are used to seeing them	1	0
Residents want to protect monkeys	1	0
Monkeys eat invasive plants	1	0
Total	**27**	**0**

Table M6. Positive impacts on monkeys.

Positive impact	# of occurrences	# of occurrences in FWC quotes
Moved to/live in a sanctuary	6	0
Are no longer being trapped	3	0
Fed by humans	2	0
Treated as a pet	1	0
Monkey getting joy from evading capture	1	0
Total	**13**	**0**

Table M7. Negative impacts on monkeys.

Negative impact	# of occurrences	# of occurrences in FWC quotes
Monkeys are caught/trapped/caged	8	0
Monkeys are tranquilized	7	0
Monkeys are killed	7	0
Monkeys are caught and sold to research labs	5	0
Eat human junk food	4	0
Experience psychological damage	4	0
Forced to move to another location	2	0
Threatened to kill monkeys	2	0
Monkey abuse from humans	2	0
Shot at	1	0
Sterilized monkeys	1	0
Monkeys attacking each other	1	0
Total	**44**	**0**

Table M8. Monkey problem-prevention actions suggested in newspaper articles.

Problem-prevention actions	# of occurrences	# of occurrences in FWC quotes
Don't feed monkeys	5	0
Don't look monkeys in the eye	1	0
Don't let monkeys escape	1	0
Don't lure monkeys	1	0
Report sightings	1	1
Total	**9**	**1**

Table M9. Text in newspaper articles interpreted as a frame for why Floridians are experiencing problem interactions with monkeys (i.e., problem frames).

Problem frame	# of occurrences	# of occurrences in FWC quotes
Monkeys have become habituated to humans	2	2
There are no natural monkey predators in Florida	1	1
The monkey population has increased rapidly	1	0
Problems are caused because people feed monkeys	0	4
Total	**4**	**7**

Table M10. Text in newspaper articles interpreted as a frame for what Floridians can do to address problem interactions with monkeys (i.e., solution frames).

Solutions	# of occurrences	# of occurrences in FWC quotes
Capture or trap monkeys	47	10
Re-locate monkeys to a sanctuary or animal rescue facility	11	2
Leave the monkeys alone	7	0
Sterilization	5	0
Stop exterminating or trapping monkeys	5	0
Euthanize	4	0
Protect them	3	0
Test monkeys for disease	2	0
Apply for pet permits	2	1
Control the monkey population (in general)	2	0
Monkeys have to go	2	0
Trapping monkeys is wrong	2	0
Conduct research to determine monkey risks to humans	1	0
Report sightings	1	0
Don't keep monkeys as pets	1	0
Total	**95**	**13**

Table M11. Titles of 2011-2013 monkey-related newspaper articles included in analysis.

- A new life for Mystery Monkey
- BAIT FOR A MONKEY: ANOTHER MONKEY
- BITE TURNED MONKEY FROM FRIEND TO FOE
- CAPTURE OF MONKEYS TRIGGERS DEBATE
- Captured monkey safe at zoo
- Catching, selling Silver River monkeys is lucrative
- 'Citizen' biologist studies Silver River monkeys
- Dania Beach monkeys endangered, wildlife officials warn
- Dumpster-diving, roof-scampering mystery is solved
- Experts issue warning after monkey attack
- Lauderdale man nabbed for illegal monkey business
- LIKE AN UNDERSTUDY, A NEW MONKEY STEPS UP
- MEET THE'MONKEYWHISPERER'
- MONKEY INJURES WOMAN
- Monkey runs wild on U.S. 1; owner cited - KEY WEST
- MONKEY'S CAPTORS GET CALLS, THREATS
- MOVE OVER, MYSTERY MONKEY
- MR. MONK HAS SETTLED IN
- Mystery Monkey caught in St. Pete
- MYSTERY MONKEY WAKES IN CAGE TODAY
- Officials wonder if monkey escaped from area owner
- OFFICIALS: MONKEYS OFF-LIMITS TO TRAPPER
- Palm Coast monkey remains at large
- Perfect fit for a primate
- Roaming Mystery Monkey caught in St. Petersburg has herpes B
- Sightings spur concern that population of monkeys is growing, spreading out
- SILVER SPRINGS MONKEYS WON'T BE TRAPPED THIS YEAR
- state news
- Tampa Bay's 'mystery monkey' caught after 3 years on the run

Table M12. Names of newspapers in which monkey-related articles appeared.

Newspaper	# of articles
Tampa Bay Times	12
The Tampa Tribune	3
Gainesville Sun	3
Palm Beach Post	2
Miami Herald	2
Orlando Sentinel	1
Bradenton Herald	1
Key West Citizen	1
St. Petersburg Times	1
Ocala Star-Banner	1
Daytona Beach News	1
Sarasota Herald Tribune	1
Total	**29**

Table M13. Years in which monkey-related newspaper articles were published.

Year	# of articles
2011	5
2012	19
2013	5

Table M14. FWC Sources.

FWC Name mentioned	# of occurrences
Gary Morse	6
Baryl Martin	6
Joy Hill	2
Karen Parker	2
Lee Beach	1
Bobby Dube	1
Gabriella Ferraro	1
Kenny Holmes	1
General FWC	1
Total	**21**

Table M15. FWC monkey documents analyzed, by document category.

Document type	# of occurrences
Internal management plan	2
Monkey talking-points	1
Monkey management history	1
Internal technical report	1
Internal correspondence (letters)	1
Total	**6**

Table M16. Sources of FWC monkey documents.

Document source	# of documents
FWC	6

Table M17. Monkey descriptor code families in FWC documents.

Descriptors	# of occurrences
Population size/distribution	18
Status	12
Biology, natural history	5
Eating, food/feeding habits	4
General traits	3
Actions of a particular monkey	2
Total	**44**

Table M18. Negative impacts monkeys have on people or the environment mentioned in FWC materials.

Negative impact	# of occurrences
Vector for disease transmission to humans	14
Threaten human safety	12
General nuisance	4
Threaten native ecosystems/species	3
Total	**33**

Table M19. FWC document statements related to positive impacts monkeys have on people.

Positive impact	# of occurrences
Used as a research tool	4
Are a tourist attraction	1
Presence of monkeys enhances an area	1
Total	**6**

Table M20. FWC document statements related to monkey problem-prevention actions.

Problem-prevention actions	# of occurrences
Don't look monkeys in the eye	1
Total	**1**

Table M21. Problem-framing statements in FWC monkey documents.

	# of occurrences
People feed monkeys	4

Table M22. Statements in FWC monkey documents suggesting solutions to the monkey problem.

Statement	# of occurrences
Trap monkeys	33
Remove or relocate monkeys	17
Control or monitor the population	10
Sterilization	9
Euthanize problem monkeys	5
Educate the public	3
Public request to leave monkeys alone or protect them	2
Permits are required	2
Test monkeys for diseases	1
Report sightings	1
Place barriers around current populations	1
Conduct further research on monkeys	1
Total	**85**

Table M23. FWC press releases on monkey topics, 2011 – 2013.

Release Title	Release Date
Enforcement of illegal monkey sales	
FWC investigators foil illegal monkey sale	7/11/2011
FWC shuts down illegal monkey sales	10/30/2013
Monkey sighting/capture announcement	
Patas monkey sighted in Williston	1/13/2011
Patas monkey spotted in Gainesville	4/20/2012
FWC catches elusive monkey	10/25/2012